The Builder.

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ON more than one occasion we have mourned over the decay of skill amongst our operative bricklayers,—the sad result of cutting-estimates, sub-letting, and the use of "compo"—and held up to merited condemnation the work to be found in the majority of our ordinary dwelling-houses. Bricklayers are no longer animated by the right spirit; pride in their work they have none; anxiety to excel exists no longer. Exceptions, of course, there are; men desirous of being something more than mere labourers,—prompt, able, and ingenious, who know something of lines, can find enjoyment and advantage in a mechanics' institute, and will give extra time and thought to their work, solely for the gratification of seeing it to be good. We speak, however, of the general body, and the exceptions, if they were asked, would confirm what we say.

The men themselves are scarcely to blame: they have not had fair play. There are few apparent inducements for good work or superior skill; rapidity and bad work are what their masters have desired, and the result is, that men capable of executing good work are with difficulty to be found. We said there are few *apparent* inducements, because it is certain that if a workman apply himself vigorously and resolutely, and acquire superior skill, he may rely on its proving, in the end, the means of advancing him in life, and winning for him the confidence and respect of his fellows.

An able and upright artizan deserves the respect of all,—more respect, even, than is usually accorded him. To be honest and *virtuous* is the first requirement—far beyond the technical skill of which we are speaking; and we would earnestly and kindly exhort to both. Some efforts to advance our operatives are urgently needed: it has always been with us an anxious desire and a pressing duty, and we run the risk of offending by plain speaking, with this great end in view.

The brickwork to be found in the neighbourhood of London, east, west, north, and south, is truly disgraceful: unworkmanlike, unsubstantial, deceptive, dangerous. In some, and not a few cases, the mortar is compounded of, what is called, sand dug on the spot, rather dirt than grit, or, at the best, of so hungry a nature as to demand much more lime than is given, or is in other respects desirable; the bricks are often spongy and bad, incapable of resisting one-tenth the pressure of a really sound brick, and, still further to weaken them, with a huge hollow in the underside. The extraordinary difference in the strength of bricks we shewed by experiment not long ago, and the injurious effect of this hollowing out.

Now let us look at the execution of the work. What do we see? Mortar joints three-fourths of an inch thick, and yet a series of cavities throughout the walls unfilled; the wall in two separate leaves scarcely tied together by a header at every three or four feet, (many courses without any headers at all), instead of consisting wholly, as it should, of header and stretcher alternately. Bond in the other direction there is little or none,—you may find the upright joints running one into another for fifteen or eighteen inches. The half-brick work forming the flues and chimney breast is loosely put together, so as afterwards to allow smoke to find its way into the apartments,* coarsely rendered inside with common mortar, instead of pargetting, and the arch (to misuse the word) over the chimney opening is only kept in its place by the chimney bar which the Buildings Act calls for. The arches (?) over the window openings are little better, as is proved by the cracks in nine out of every ten houses with compo'd fronts. Where the front is not wholly compo'd, but a narrow cement architrave is to be put round the windows, a miserable imposition termed a six-inch arch is introduced, so that it may be hidden by the aforesaid architrave.

Wood bond being for the most part interdicted, walls are raised without any, and we have in our eye at this moment several flank walls, 40 feet high, to semi-detached houses, which stand without a morsel of bond from top to bottom, or any thing to steady them. The occurrence of accidents with work thus executed can excite no surprise, especially in bad weather: the wonder is that we do not hear of more. To increase the risk, too, irregular masses of brick run together in the kiln, known as "burrs," are often used for cheapness' sake, especially in the lower parts of buildings, and, having no solid bed, materially lessen the strength of the walls. This, however, as well as the absence of bond, is the fault of the builder rather than of the operatives, and so, indeed, is the bad workmanship and want of skill amongst these operatives, to which we have been alluding, and which we are most anxious to assist in remedying.

As to bond, it is of the utmost consequence that builders should resort to the use of hoop-iron and cement. Do not let them wait for an accident, fancying, because some walls stand without this precaution, that it is unnecessary; they are exposing themselves to imminent *risk*, and cannot even plead the increased expense as an excuse for omitting it; this being comparatively unimportant.

Professor Hosking, in a "Guide to the Proper Regulation of Buildings in Towns," published this day,† and which has come into our hands too recently to enable us to do more at present than make one or two extracts, says, as to the abandonment of timber bond,—

"One important principle which ought to be always had in view in the employment of these materials (brick and stone) in ordinary buildings is for the most part wholly lost sight of, if indeed it be at all recognised in the modern practice of building. Brick or stone, or brick and stone together, with mortar as a setting material—not only as a cement for the purpose of sticking the materials together, but as a means of rendering excessive labour upon the beds and joints of stones unnecessary, and to make up for the casual unevenness of the beds of bricks, and to adapt them to the various forms required to be produced—being capable of producing any and almost every kind of structural erection required in building, without permanent aid from any other materials, are best employed when they are employed in such manner as to be free from dependence upon other and less trustworthy materials. The most perfect erections as buildings are those in the composition of which this principle has been understood and applied, and in the execution of which it has been fairly practised. To save in the quality or quantity, or in both, of materials, and to economize labour, or to satisfy the judgment of ignorant constructors, brick and stone walls are too commonly made to depend wholly or in great part upon timber in bond and in plates; and as timber takes its place for such purposes most frequently in situations where its bad tendencies are most mischievous, and in such manner as to bring its objectionable qualities into operation almost of necessity, the brick and stone walls of most modern erected buildings, such as houses, in our English towns, are rendered highly inflammable, and are much exposed to early decay, and liable thereby to become dangerous, even if they escape becoming so from access of fire to the timber. If adventitious aid be given to brick or stone walls by foreign materials, the materials ought to be at the least harmless, and the aid superfluous. Iron in bulk is a most improper substance to incorporate with walls, because of its great susceptibility of heat; but iron used in thin laminæ, as hoop-iron laid in walls in the bed-joints of the brick or stone, cannot be productive of any bad consequences to the structure, whilst it affords the means of tying together walls which, because of recesses and voids, whether for doors and windows, or as flues, may be slighter or less solid than they ought to be.

As bricks are commonly made of the same form, and come to the hands of the builder practically of the same size; and as bricks, even where stone is principally used, are requisite, if not essential, for many of the purposes of dwelling-houses and such like buildings, the thicknesses of walls are conveniently determined to be as they can be produced in brickwork, that is to say, of so many bricks or half bricks. Practically, too, brick walls take a middle place among walls of brick and stone together, and walls wholly of stone. Some kinds of stone are harder and more durable than bricks are commonly produced, whilst some kinds are softer and less adapted to withstand the action of the weather than bricks of average quality are found to be; but bricks come to the hands of the workman regular and unvarying in form, and that form the best adapted for the arrangement in the construction of a wall which, under the designation of bond, gives such a degree of consistency to the structure that a weight placed upon the top of a well-bonded wall in any place is carried by the wall in every part throughout its whole thickness, and throughout a greater or less proportion of the length, according to the height of the wall, and so in degree as to a weight imposed upon the wall at any intermediate level.

Bond in brickwork is most conveniently and most effectively formed and maintained by disposing the bricks in their courses either endwise and lengthwise (technically, header and stretcher), alternately brick and brick, or course and course; that is to say, that the bricks in every course should be laid alternate header and stretcher, or that the courses should consist of all headers and all stretchers alternately. The former arrangement—alternate header and stretcher in the same and in every course—is known in this country as Flemish bond; and the latter — alternate courses of header and stretcher—is distinguished by the term English bond. Neat work in face can be produced more easily with Flemish bond, but English bond has the reputation of being the best bond structurally.*

The arrangement of alternate header and stretcher in the same course is that which most prevails in building walls with stone; or

* The evils of such work, which is not confined to the metropolis, are evident. A correspondent near Bradford thus writes:—A few days ago the occupants of a house in Bowling were surprised at perceiving smoke issuing from some cracks in the ceiling of the chamber. Having for several hours previously been annoyed by the smell of burning wood, they concluded that there must be something on fire in the roof. Accordingly, the plaster ceiling was broken into, and the main beam was found to be on fire. A plentiful supply of water being at hand, the fire was soon extinguished. An examination was then made as to the origin of the fire, when it was found to have been occasioned by a header in the flue, either left out by the bricklayers when building, or knocked out by the carelessness of the joiners when fixing the ceiling joists, thereby admitting of an accumulation of soot in the roof. We cannot be too careful in watching bricklayers and joiners when at work about flues. Often do we hear of the whole of the papering of a room being spoiled by smoke issuing from above skirting-boards, and sometimes we hear of chimney-pieces being on fire; the whole occasioned by the joiner driving half or a quarter of a brick into the flue, when plugging to fix his work.

† Murray, Albemarle-street.

* Why the two arrangements described above should be distinguished by the names they bear is a matter of uncertainty; at least it is unknown to the author, who supposed, in common with most other people with whom he had conversed upon the subject, that alternate header and stretcher in the same course was the practice in Flanders, and generally in the neighbouring countries on the continent; whilst the term English bond seemed to imply that the arrangement which bears that designation is peculiar to England. A visit made a few years ago to the countries where Flemish bond ought most to abound, if the name be properly applied, enabled the author to observe what had never, to his knowledge, been remarked by any person who had published his remarks, and what was quite unknown to every one to whom he has stated, since his return, what he had observed. At Rotterdam and at the Hague, at Antwerp, at Brussels and at Liege, at Cologne, at Mayence, and at Frankfort, and again throughout the north-eastern parts of France, brick walls are built according to the arrangement distinguished in England as English bond; and Flemish bond is unknown—at least no single example of it fell under the author's observation in any of the towns and countries indicated, although his attention was called to the subject by the quay walls at Rotterdam before he set foot on shore.

rather, the bonding of stone walls is best effected by that kind of arrangement, whilst, indeed, alternate courses of headers and stretchers in a stone wall would be both unsightly and absurd."

On another point, to which we have already referred, our author has the following remarks:—

"Under ordinary circumstances the half-brick thickness of brickwork which separates the inside of a common chimney-flue from the inside of a building, does not become heated to such a degree as to justify the slightest alarm for the safety of timber in contact with the outside of the brickwork; but it is so difficult in practice to secure the complete filling-in with mortar of the various parts of brickwork, that prudence dictates the propriety of requiring the surfaces of the work, both inside and outside any chimney-flue within a building, to be plastered over, to stop imperfect joints, and so to prevent the lodgment of soot, which a spark passing up the flue will enkindle, and which, being enkindled, will endanger the safety of the building through a joist, a flooring-board, or a wooden skirting, which may abut upon, or lie against, the unstopped joint towards the inside of the building. Not only, indeed, are the joints of the brickwork often left unstopped with mortar, but wooden plugs are driven into them, and often quite through into the chimney-flues, to afford the means of fixing the wooden skirtings; and these are perhaps the most frequent means of communicating fire from the flue to the skirtings, and so to the inside of the building.

'On Saturday, the 9th October, 1847 (the newspapers relate), Broughton Old Hall, near Manchester, was partly destroyed by fire, and damage was done to the extent of nearly 1,000*l*. The fire was entirely subdued in less than two hours, after destroying a large portion of the roof and of the cupola over the south front, besides the upper part of the grand staircase. As the walls and ceilings were in course of receiving embellishments, they also suffered much injury both from fire and water. The disaster is attributed to the joiners on the previous night having left a very hot fire in one of the rooms, which had ignited some plugs, the ends of which, in one direction, communicated with the flues, and, in the other, with the skirting-boards of the room.'"

More attention to the materials and workmanship of structures in the metropolis, on the part of the district-surveyors, might usefully be called for.

A word as to the progress of the measures for obtaining an amendment of the Buildings Act.

The committee appointed by Lord Morpeth to consider the subject have held several meetings to take evidence, and are now about to report. The constitution of the offices of the Official Referees and Registrar has been the subject of some animadversion, and suggestions have been made for remodelling the same entirely, with a view to render the administration of the law more speedy and economical to the public. The subject of "special supervision" has also been considered, and, indeed, if we are rightly informed, most of the principal objections to the form and working of the Act have received attention.

We are satisfied that any attempt to improve the present Act, by another supplemental Act, will prove a failure; and we earnestly hope that the committee will not fail to recommend Lord Morpeth to bring in an entirely new Bill in preference to making such an endeavour.

Chester Cathedral.—At a meeting of the Archæological Institute on the 3rd inst., Mr. R. Hussey communicated a plan of remains of the Norman choir of Chester Cathedral, brought to light during recent restorations. Mr. H. remarked, that the usual proportions of the earlier Norman structures had there been observed, and that the eastern apse was semicircular. The plan also illustrated the form of the present cathedral of Chester, as first built, but subsequently modified.

THE PRESENT STATE OF TASTE IN GOTHIC ARCHITECTURE, AND INKLINGS OF THE FUTURE.

ARCHITECTURE IN MANCHESTER.

In a former notice of the town of Manchester, we mentioned the evidence there afforded, of greatly improved taste in architecture. Notwithstanding that there may be sufficient reason, in the present state of the art, for the charges sometimes made against its professors, it is pleasant to have it in our power to record a step forward in their capacity for artistic perception, betokening, as it does likewise, the growth of a new desire for the graces of art, on the part of the public. Architects, indeed, are much what the world makes them, though they are not on that account absolved from all care for public taste, of which they do not sufficiently feel that they are the proper guardians.

In ecclesiastical architecture, much the same change in taste is apparent, as at other places. The church at Hulme, by Goodwin, and that at Cheetham Hill, by T. W. Atkinson, were once greatly admired, and in many respects deservedly so; but they have not the orthodox length of chancel, they may possibly be a little out in some details, and they cannot be mistaken for old churches, therefore their architects, who designed when Gothic architects were few and of questionable ability, would now be sneered at as incompetent.—Individual labour in an extensive and intricate study, like that where examples of buildings and details form the matter of research, can do comparatively little, and by no other means than that assiduous and combined labour, with systematic arrangement, with which the pursuit of the study has been of late years carried on, could the present accurate knowledge of the style have been gained. In the circumstance of such a position, the architects of the present day have the advantage of their predecessors; but in proportion to those advantages, have they availed themselves of such a position? have they become better artists? The answer *should* not be doubtful.—Between many such churches as the two above mentioned, and some later works,

> "——— that, shunning faults, one quiet tenor keep,"

the calm judgment of posterity may find the difference in that which should be the chief ingredient in design, namely, ART. If something more than learning in mere schools and dates, or than skill in manipulation, is requisite to form a painter or a sculptor, architecture must be included under the same category.

Of the change of character in church architecture, thus referred to, the new Catholic church in Chapel-street, already noticed in this journal, is a remarkable instance, displaying knowledge of the examples at Howden and Selby, from which it has been adapted, and great beauty of detail. It is a cross church, with centre tower, surmounted by a lofty spire which has the appearance of too great breadth at the base. The apex is terminated by a ball of copper gilt, and a cross, also of copper, with a weathercock. A turret stair on the north side, has a spire, similarly surmounted, and which is covered with slate. The walls are entirely of stone, in regular courses, hammer-dressed, and are to be plastered internally. The length of the church can hardly be less than 180 feet, having four bays, or arches, in the length of the nave, and a like number in the choir. Other dimensions, according to our measurements, were:—

Centre to centre of columns in the length of the nave, 18 feet 6 inches.
Thickness of each column in the nave, 3 feet.
Thickness of each column supporting the spire, 7 feet.
Thickness of walls of aisles, 3 feet.

In the nave there is a plain collar-beam roof, but, in the choir, springers are left for a future groining. In the nave clerestory, there is a passage in the thickness of the wall. Figures of angels will be carved in the spandril spaces in the choir. The capitals have rich foliage, but the carving is not so successful as might have been desired. The west front, adapted from that at Howden, has richly crocketed pinnacles, each having the figure of an angel as a finial. The east window, of flowing tracery, copied from the example at Selby, may be considered an instance of the misuse of old examples. Had the architects consulted the whole of Mr. Sharp's illustrations of decorated windows, instead of procuring merely one plate from his "Parallels," they might, we think, have produced something strikingly novel, and even more in accordance with the spirit of the style adopted, than is that particular example itself. The Selby window is in some parts ungraceful, and even at variance with the principle of decorated tracery. In an original work, trifling mistakes may be excused, but it reflects no credit upon an architect to copy them. Modern practice, however, teaches different, and the greatest possible use is made of old examples, whilst the least possible benefit to art results from them. By learning from examples, mistakes may be avoided; by copying them, their faults become more glaring in the transcript, than they were in the original.

From this church we passed to a smaller edifice, close by, erecting for the Free Kirk, and which we think sufficiently important to merit particular description. Messrs. Travis and Mangnall are the architects. The style upon which the design is based, is Gothic and perpendicular; but galleries being required, the architects, in place of separating the nave and aisles by the ordinary stone piers and arches, have substituted ornamental iron columns—bracketed out to support the galleries—carrying timber arches, above which is a range of wooden dormers in what may be called a low clerestory, also of wood. From the same level in the transverse section, spring the arches of the open-timbered roof, so that the interior, with great novelty of design, has a picturesque effect. Externally, the church has at the west, a central gable, a smaller gable to the side roof, and a tower and spire at the north-west angle. The ridge of the side roof continues for but a short distance from the gable (we think about 10 feet), and thence, as a "lean" to the "clerestory," containing the dormers already mentioned, continuing the line of the apex. The window tracery in the church might, perhaps, have been improved, the angles of the spire a little more *prononcé*, and the labels to one or two arches, better; but the details, generally, display great care and taste, and amongst such portions are the crockets to the label of the west window, the iron railing, the woodwork generally, and many other parts, and in the schools and attached buildings.

The principal novelty has been the subject of much condemnation. For ourselves, we notice *the* church, because it shews more of real design than hundreds of the structures lately erected throughout the kingdom, on what are called correct principles, and if not altogether what might be wished, by no means justifies much of what has been said about it. It is at least that which its more elaborate neighbour is not, a foretaste of what we hope the architecture of England may become, an evidence not only of skill in drawing and arrangement, but of original thought. Indeed, difficult as we confess it is, to lay down correct principles for criticism, in reference to the future practice of ecclesiastical architecture, we are, as we have said, far from satisfied with the present state of this branch of the art. Formerly we had a version of Gothic architecture, in which were distorted outlines, and other deformities, which a slight acquaintance with the architecture of the middle ages would have taught us to avoid; but whilst we have gained by the recent improvement in architectural knowledge, we have gained little of what ought to have resulted from the increased store of our materials. For ourselves, we do not always necessarily think that church the best piece of architecture, in which there is no detail that can be found fault with, nor do we think that every church built in the present century, except during the last ten years, must necessarily be not worthy of examination. But such has become the opinion of the day, appears in every newspaper article in which a church is the subject of criticism, and infects the profession of architecture itself: it is an opinion which we lose no opportunity of eradicating, fatal as it is to the high standing of the pursuit amongst kindred arts and fields of thought, and discreditable to all who are engaged in the practice of architecture. In the discussion respecting the particular work which has called forth these remarks, we were as little pleased with the tone of defence as with that of attack; the same feeling, that of *absolute*

obedience to old forms, was apparent in both. If the architect of a church be ignorant of the mediæval styles, then, indeed, he may deprecate criticism, but if not, and he have produced a design in which original thinking is manifest, let him boldly meet his detractors, and he will have us to applaud him as one of those pioneers in taste, who, notwithstanding all may not yet say so, we believe were never more needed.

Restoration is a different matter, and we are glad to see that much has been already done in that way, in Manchester. The town possesses a very interesting church, formerly collegiate, but now a cathedral. Although of the latest period of Gothic architecture, it has many beautiful parts, in spite of the perishable nature of the stone used in its erection, and the restorations to which it has been subjected, at less favourable periods than the present. Internally, there are some remarkably fine roofs, and much old stallwork, and other woodwork in various parts of the building. We hope all this will be most carefully preserved; but we regret to see that the central portion of the double rood-screen is to be removed.—Although we have used the word "restoration," *conservation* is what we would, in a large majority of cases, make the limit of operations; for, to restoration, as carried on during late years, we owe much positive destruction of most interesting and valuable works. It can never be too often reiterated, that however carefully a restoration may have been conducted, it annihilates one of the most important attributes of the original, however much that original may have become broken or decayed. The restorations at the cathedral at Manchester seem to be on a very extensive scale, as noticed in a former number, and include not only polychromatic decoration, but a fresh arrangement of the pulpit and fittings, rendering the building more in accordance with its new purpose.—Chetham's College—a most interesting building, originally built about the time of Henry the Sixth, but which has many later additions—has also been undergoing restoration under the direction of Mr. George Shaw, architect, of Saddleworth.—Amongst new works spoken of in Manchester, we hear of considerable alterations in the market in Victoria-street, which is to be covered with a roof, supported by iron columns, at an expense of 700*l.* The ornamental part of the work is said to include pediments, enriched with ornamental accessories in terra-cotta. Recently it has been decided to excavate the ground for the purpose of storeage.

THE PRESENT SYSTEM OF COMPETITION-TENDERS.

Sir,—It is to be hoped that your correspondent, "A Surveyor," is not a true expositor of the feelings and opinions either of the building or surveying class. From my own experience, I apprehend that both would repudiate his statements and inferences, though they might acknowledge that there are defects in the present system of competition-contracts which might be remedied with advantage to the employer and employed; but that it is a system which is "a curse to the country," and which requires "the interposition of the legislature;" that "it is a drawback to everything that is just and honourable," and "pernicious to trade;" are assertions which the facts mentioned by "A Surveyor" will not warrant, nor which the large body of the architectural, professional, or building interest in general, will maintain.

A caustic writer might be tempted to make some severe remarks on the standard by which "A Surveyor" measures the consciences of the parties in his anecdotes about young "wiseacre" architects. For my own part, I see nothing in either case but a strict and conscientious discharge of the architect's duty to his employer. But I had rather occupy your columns with a few remarks on the system of competition and mode of obtaining contracts now adopted, premising that I differ *in toto* from "A Surveyor" in considering competition of itself a bane. I regard it, on the contrary, not only in the building business but in all trades and professions, if fairly and honourably conducted, as a means of rising in the world, and a source of honour. To builders it is of the greatest advantage: it gives beginners a standing, it prevents old firms carrying away all business, and, by its result, creates work. Builders would have lost many a job if the employer had not felt a security under the system of competition contracts. But it is useless to complain with a maudlin sentimentality of the system; it is now too strongly engrafted in our business-habits to be given up, and it has been found to afford the greatest facility in arranging works, great despatch in execution, and great simplicity and rapidity in closing accounts.

In days of yore, when works and jobs were scarce—when wealth and the appreciation of art were limited to patrons—when works were entrusted to builders who acted as surveyors and architects, or were done mutually by tradesmen under the emphatic term of "blood-work,"—when surveyors met at ten, dined at one o'clock, and saw double afterwards—the system of measuring flourished, and was perhaps adapted to the times; but those days are past: this machinery for the valuation of works was found inefficient when, about twenty-five years ago, the improvements of the metropolis and the extension of architectural knowledge, called the building interest into incessant activity. Contracts by prices were tried, and also by tenders in gross, each party making his own estimate. Both failed; the former, from the want of principle and the uncertainty in the modes of measurement; and the latter, from the enormous expense which it entailed upon the unsuccessful building competitors.

The present system of tender by quantities was then adopted, and I see no reason to mistrust its efficacy, if it is fairly and honourably acted upon by both parties. We are told that no wise man buildeth a house without first setting down and counting the cost thereof; and surely a builder is capable of doing this correctly, and guaranteeing the amount by contract.

But complaints have undoubtedly been made against the system both by architects and builders: it is liable to abuse, and there are defects which require remedy.

Perhaps the most important point connected with it is, that the quantities should be ascertained by surveyors of experience and integrity. This branch has, I fear, been often entrusted to incompetent hands. It is a trust of responsibility, and demands great industry, steady application, minute knowledge of the architectural profession, and high integrity of character. There are doubtless many gentlemen who possess these requisites, but I cannot but regret with your correspondent, that the old class of surveyors of this description is not well replaced by the rising generation. It would be a great benefit to the profession and the building interest at large, if a class of men were to educate and employ themselves solely in this pursuit. The Institute has, I fear, committed an egregious error in excluding this class from a standing in the profession; the mutual intercourse which would otherwise have ensued would have benefited both parties, and have given this class a more enlarged standard for estimating the importance of their duties. But I may, perhaps, be met with the objection, that the Institute is an Institute of Architects, and not of architecture.

Another defect in the system of taking out quantities is the uncertainty in the principle of measurement adopted for some trades. I would instance joiners' work, but especially masons' work. As regards the latter, the old system is most erroneous, particularly when applied to Gothic work. I have known instances in which a practical mason has asserted, that the quantity of labour estimated upon the quantity of stone given has been impossible. This also is a case in which the Institute might have done good service to the profession, by collecting information from experienced surveyors, and, by a thorough digest of the principles of mensuration, have enforced a system for the general guidance of the building profession.

The discrepancy in the amount of tenders is certainly sometimes astounding, and is as unsatisfactory to the architect as to the contractor; but the builders must here decide for themselves: the value of the work is a point for their sole consideration. That fictitious tenders have been delivered I know, from sad experience, to be true; but I have never met with such a swindling transaction as your correspondent relates, and must believe, from the general high character of builders, that it is an exception to the usual course of business. The architect, however, has a simple remedy against such combinations, by adopting the Chancellor of the Exchequer's system, and placing on his table his own valuation of the quantities in a sealed cover, and should the lowest tender exceed his amount, the whole should be rejected.

A question has arisen, whether the extras and omissions should be taken on the quantities? I apprehend this should never be allowed, as it alters the nature of a contract. Unintentional errors, even with the greatest precaution, will occur, especially from the short time usually allowed the surveyor; but these errors are as often in favour of the builder as against him. The quantities should be carefully examined by both architect and builder before signing the contract, and any error should then be rectified. At the conclusion of the work, the drawings and specifications should alone be the guide for settling claims for variations.

I fear I have intruded too much on your columns. My object has been to shew that the present system is, in principle, correct; and that there is no ground for reverting to the old, uncertain, and extravagant system of measure and value.

T. L.

FEES TO ENGINEERS AND SURVEYORS.

In the case of "Bushell *v.* Weiss," an assistant engineer, who had waited for twenty-two days while in London to give evidence before a Parliamentary committee, as to the accuracy of the plans he had been instrumental in preparing for a projected company which 'fell to the ground by reason of imperfection in the plans and sections,'—the plaintiff demanded payment at the rate of 10*l.* 10*s.* a-day for the twenty-two days' attendance, on the ground that the engineer-in-chief had refused to give his evidence, and that he, the assistant, had acted as engineer-in-chief himself, and was entitled to 10*l.* 10*s.* a-day whether, for giving his evidence as to the accuracy of his plans or for merely waiting to do so.

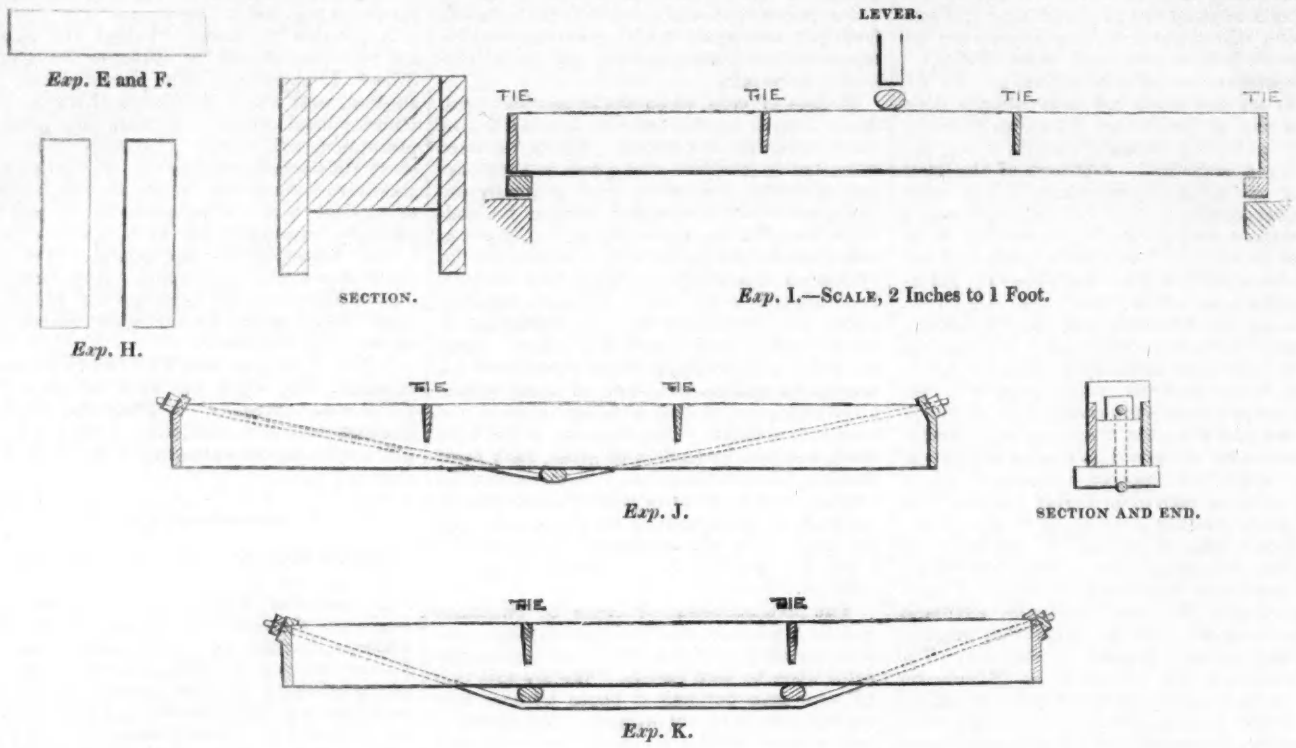
Colonel Landmann, the engineer of the London and Greenwich Railway, stated in evidence that 10*l.* 10*s.* a-day was most certainly not an unreasonable rate of remuneration to the plaintiff for his services as a civil engineer in 'railway days,' though at other times the remuneration would depend on the state of the market.

The defendant, a cutler, and one of the provisional committee, maintained the demand to be 'most unconscionably excessive,' and the Lord Chief Justice considered that 'nothing could be more improper, ungracious, and deserving of reprobation' than such a demand under such circumstances. The jury found for the plaintiff for 85*l.*, being at the rate of 5*l.* 5*s.* a-day for twenty-two days.

The following, we may here add, is an extract from the examination of Captain W. Yolland, R.E., before the Metropolitan Sanitary Commission:—"At what rate have railway engineers and surveyors obtained copies of your plans?—Copies of plans drawn upon the 6-inch scale have been supplied at the rate of 10*s.* per mile.—What have they charged to the companies?—We have memoranda in our office stating that the charges made to companies have varied from 30*l.* to 80*l.* per mile."

The Necessity for Communication between Passengers and Guards by rail was never more clearly proved than in the recent instance of the burning of the Countess of Zetland's carriage, about *four miles from Rugby*, while her ladyship and her waiting-maid were seated in it. A gentleman, attracted by the screams of the countess and her attendant, and by the smell of something burning, *endeavoured in vain to convey an alarm to the guard or engine-driver*. He then opened the door of his carriage and scrambled along the sides of the train to the truck on which her ladyship's carriage was placed, and found her clinging to the wheel in a terrible state of alarm. The lady's-maid had fallen off. *On the train arriving at Rugby*, an engine was sent along the line to look for her. She had fallen in a state of insensibility with her hands across the rails, and before the engine-driver discovered her, *the wheels of the engine cut off her hands!*

EXPERIMENTS ON THE FORM OF CAST-IRON GIRDERS.



Exp. E and F.

Exp. H.

Exp. I.—Scale, 2 Inches to 1 Foot.

Exp. J.

Exp. K.

EXPERIMENTS ON THE FORM OF CAST-IRON GIRDERS.*

We continue the record of important experiments on the relative value of different forms of cast-iron beams, with Mr. G. Cooper's own observations upon them.

Experiments E and F demonstrate the values of doubling and trebling the quantities of experiment A; but they are weighted reversely, viz., on the minor instead of the major depth —experiment E being similar to experiment B reversed; bearing about 25 per cent. only of the same. Experiment F, also similar to experiment C, bearing about 40 per cent. of it: the deflection being excessive, averaging from one-third to one-half of their respective depths. Thus, for any available purpose, they exclude themselves; but, in connection with the vertical web, we revert to experiment D, and it is then the accumulated material is of value. Experiment H is a continuation of experiment C, with the quantities doubled: the strength in comparison therewith is decreased and the stiffness increased, and the same observations obviously apply wholly to this experiment as to experiment C, shewing it to be a section to be received with caution, and to be used only when a connection can be made of each with the other, as more clearly seen by the following experiment I, and then not of the double breadth; the positive strength of this great addition of material, in comparison with four times experiment A, being only as 3·8 to 2·64.

Experiment I is a new experiment, inasmuch as a combination of two is made of experiment A, the two being made into one box-beam by transverse ties, the whole depth, at each end; and two intermediate ditto of three-fourths the depth. Excluding the weight of the ties, the average weight of the several beams experimented upon will not exceed the double of those of experiment A. The main advantage, it will be perceived, gained by this connection, consists of increased stiffness, and not strength, the strength being no advance upon either experiments B or C, as, when the weight of the ties is deducted, identity appears to exist with them. In looking at the simple forms, now briefly rehearsed, and interestingly made more evident by studying the accompanying papers lettered according to the preceding remarks, it will be observed that a near equality of deflection in the whole exists according to the equal weights even to the breaking points, and that in the whole of them no indication of failure is given by the beam previous to the instant of actual rupture.

Passing now to the consideration of the application of the wrought tension-rod to cast-iron beams, as a means of deriving therefrom an increase of strength, it has been the object, in these experiments, to apply it in the cheapest, readiest, and most simple way; and the box-beam experiments I, being that which presented the greatest facilities, as well as having already produced a result positive to itself and comparative with experiments A, it was thereto applied in the four different ways, as shewn in the various experiments lettered J, K, L, M.

The results of the first two experiments marked J and K, are so perfectly identical that they may be taken as one;—first proving, that, whether the beam be trussed from one or from two bearing points, neither is any advantage gained by the one, nor does any diminution of strength appertain to the other. The real value of the breaking weight appears more than that of the beam untrussed (experiment I), but, upon looking at experiments J and K, Nos. 8* and 11, it is there seen that the ratio is raised by these two experiments, the one, No. 8*, shewing a reason for such a strength by an increase of weight of ten to eleven ounces, or one-twelfth of its own weight; in the other, No. 11, the cause not being so apparent. Excluding the weight of the bolt and bearing saddles, there appears to be wanting entirely the useful strength of the bolt. No benefit arises therefrom, excepting when fracture has occurred in the beam; for when the load has been regularly and progressingly laid on, and not suffered to fall at fracturing, the bolt sustains the two halves of the fractured beam from falling. This was invariably the case, saving when, at the points of failure, the load was suffered to fall with the broken beam one-and-a-half to twice the depth of the beam; in which instances the bolt gave way at the nut, that being the weakest part, the thread being *cut out* of its substance. When the load was suffered to descend with the beam at fracturing, a distance of one-half the depth of the beam, the bolt itself remained entire. It would appear from the deflection of the beam remaining so perfectly identical with the untrussed beams (experiments I), that no stiffness, or indeed any action, arises from the bolt in connection with the beam, it remaining inert, or at most yielding to the weight with as much readiness as the weight is applied, being superior in tenacity to the material to which it is added, yet to similar weights yielding a greater deflection,—leaving the load the more, the more it is accumulated. The diameter of the wrought-iron tension-rod used in these experiments was ·25 inches, and, if brought into proper action, ought to have added at least two-thirds to the breaking weights. As before observed, the diminished deflection both of these and the untrussed beams (experiment I), over the loose beams (experiment C), appears to arise only from their being tied into one casting; the one being 350, the other about 400, or about one-thirteenth to one-fifteenth or one-sixteenth of their depth. The beams experimented upon under the letters J and K were trussed by the bolt, within the line of compression, or a horizontal line drawn through the centres of the two nuts which confined its ends, would fall within the body of the beam; and such metal above and in a line with it, if the bolt were useful, as supposed, would be to it as a thrust or compression piece, until the deflection of the beam under its load brought such upper edge below the centre of the bolt, which, in experiments J and K, was not the case, the deflection being but ·129 inches.

* See p. 593, *ante*.

E and F.—Transverse Strain on a simple Rectangular Cast-iron Beam, weighted horizontally. All else relating to it, similar to last.

E.—Double Width of A.		F.—Treble Width of A.	
No. 16 Experiment. Weight of Beam, 112 oz.		No. 17 Experiment. Weight of Beam, 136½ oz.	
Pressure in lbs.	Deflection in ins.	Pressure in lbs.	Deflection in ins.
220	·172	220	
289	·222	820	·193
352	·267	988	·238
412	·307	1072	·260
472	·356	1156	·282
532	·433	1240	·312
592	·483	1279	·324
655	·560-565	1324	·338
709	·620	1363	·354
757	·670*	1399	·364
		1405	·378
		1444	·391
		1483	·442*
Breaks at the edge of the centre bearing-piece: and generally this applies to the whole of these experiments to H inclusive.		This beam was weighted in the precise position in which it was cast. The lower face, being cast in the same position (a very sound casting), although the whole of the upper surface, or skin, appeared unsound or honeycombed.	

* Broke.

G.—Transverse Strain on a simple Rectangular Cast-iron Beam, treble width of A weighted vertically.—All else relating to it, similar.

No. 18 Experiment. Weight, 158 oz.		No. 19 Experiment. Weight, 160 oz.		No. 20 Experiment. Weight, 161½ oz.		No. 21. Experiment. Weight, 162 oz.	
Pres. in lbs.	Deflection.	Pres. in lbs.	Deflection.	Pres. in lbs.	Deflection.	Pres. in lbs.	Deflection.
820	·029	820	·035	820	·042	820	·040
988	·038	988	·041	988	·046	988	·047
1156	·043	1156	·046	1156	·053	1156	·053
1324	·052	1324	·053	1324	·059	1324	·058
1492	·058	1492	·061	1492	·067	1492	·063
1660	·066	1660	·066	1660	·072	1660	·069
1828	·074	1828	·072	1828	·078	1828	·076
1996	·081	1996	·081	1996	·084	1996	·083
2164	·088	2164	·086	2164	·092	2164	·09
2332	·094	2332	·091	2332	·097	2332	·097
2500	·101	2500	·097	2500	·102	2500	·104
2688	·109	2688	·105	2688	·108	2688	·112
2812	·115	2812	·109	2812	·112	2812	·118
2956	·12	2956	·114	2956	·117	2956	·124
3100	·125	3094	·119	3094	·121	3094	·132*
3238	·13	3232	·124	3232	·126		
3364	·135	3358	·129	3358	·13		
3490	·139	3484	·134*	3484	·134		
3616	·145	3610		3610	·138		
		3736		3736	·141*		

* Broke.

Exp. 18.—Very sound.
Exp. 19.—Cast on the flat: four air bubbles.
Exp. 20.—This beam sustained the weight 1½ minutes very sound.
Exp. 21.—Air bubble at the lower edge; diminishing the width 1-5th at that particular spot.

H.—Transverse Strain on Two simple Rectangular Cast-iron Beams, each double the width of A, and placed side by side, same as C.

All else relating to it, similar.

No. 22 Experiment.
Weight of 1 Beam, 103½ oz. } 209 oz.
Weight of 1 Beam, 104½ oz. }

Pressure in lbs.	Deflection in ins.	Pressure in lbs.	Deflection in ins.
976	·005	3328	·072
1312	·012	3496	·076
1648	·022	3664	·091
1984	·032	3832	·091*
2320	·042	4000	·094
2656	·052	4168	·097
2992	·062	4336	·101†
3160	·068		

* A jar in the lever made no difference from the previous deflection.
† Broke.—Unsound casting: in one a very large air bubble.

I.—Transverse Strain on Two simple Rectangular Beams, cast in one casting; 1½ inch apart, connected by cross-tie pieces at each end, and two intermediate, dividing its length into three equal divisions.

No. 1 Experiment. Weight, 130 oz.		No. 2 Experiment. Weight, 126 oz.		No. 3 Experiment. Weight, 128 oz.		No. 4 Experiment. Weight, 130 oz.	
Pres. in lbs.	Deflection.	Pres. in lbs.	Deflection.	Pres. in lbs.	Deflection.	Pres. in lbs.	Deflection.
220		220		220	·007	220	
310		352	·004	310	·012	313	
400	·002	442	·0075	403	·017	403	·004
484	·006	535	·01	493	·023	493	·004
574	·011	613	·018	580	·026	625	·01
664	·015	694	·023	673	·032	703	·013
751	·02	787	·026	760	·035	784	·018
848	·025	877		850	·039	870	·024
929	·03	982		928	·042	964	·0275
1016	·033	1068	·032	1012	·046	1049	·033
1139	·038	1149	·033	1105	·05	1134	·036
1208	·042	1233		1183	·053	1230	·042
1380	·044	1320		1270	·058	1302	·046
1473	·05	1413		1348	·061	‡1380	·054
1567	·055	1548		1426	·065	1458	·056
1639	·059	1626		1504	·068	1537	·061
1717	·063	1711		1591	·071	1627	·066
1810	·068	1789		1684	·075	1748	·073
1888	·073	1875		1771	·078	1841	·078
1981	·078	1965		1849	·082	1930	·083
2062	·084	2049		1954	·087	2016	·09
2140	·088	2118		2074	·093	§2121	·093
2205	·094	2190		2196	·099	2211	·098
2271	·096	2259		2265	·103	2291	·103
2339	·1	2337		2352	·107	2369	·107
2415	·102	2423		2424	·11	2441	·111
2481	·106	2492		2503	·113	2510	·116
2559	·11	2561		2569	·116	2576	·118
2629	·115	2630		2635	·12	2642	·122
2715	·12	2696		2701	†	2705	*
2778	·126	2762					
2844	·128	2830					
2907	·128	2896	*				
2970	*						

The deflector did not act, the remainder of this experiment.

* Broke sound.
‡ Weights put on carelessly.
† Broke.
§ Two small cracks.

J.—Transverse Strain on Two simple Rectangular Beams cast in one casting, connected by cross ties, &c., same as Experiment I., but trussed as per sketch annexed, or the Direct Truss.

No. 5. Experiment Wt. 136 oz.		No. 6 Experiment Wt. 138 oz.		No. 7 Experiment Wt. 137 oz.		No. 8 Experiment Wt. 137 oz.		No. 8* Experiment Wt. 148 oz.	
Pres. in lbs.	Def. in ins.	Pres. in lbs.	Def. in ins.	Pres. in lbs.	Def. in ins.	Pres. in lbs.	Def. in ins.	Pres. in lbs.	Def. in ins.
220		220	·005	220		220	·01	220	·005
352	·005	310	·008	310	·001	310	·012	313	·007
436	·01	403	·012	403	·0015	400	·017	393	·012
529	·014	493	·015	484	·0025	490	·024	486	·016
622	·0175	583	·018	574	·005	577	·027	579	·021
712	·0225	676	·022	661	·009	667	·032	653	·025
796	·027	763	·026	748	·012	760	·038	735	·029
881	·031	850	·03	827	·016	847	·038	822	·033
987	·032	937	·033	905	·021	934	·042	909	·037
1065	·032	1024	·037	984	·024	1027	·047	999	·041
1155	·032	1108	·04	1067	·029	1117	·051	1085	·045
1242	·032	1186	·042	1085	·033	1207	·055	1166	·048
1322	·032	1262	·046	1175	·037	1285	·059	1252	·052
1407	·038	1345	·05	1268	·041	1363	·063	1330†	·056
1484	·038	1417	·053	1373	·045	1441	·067	1410	·058
1556		1513	·056	1460	·049	1529	·07	1497	·064
1625		1600	·059	1553	·053	1615	·073	1529	‡·068
1705		1705	·063	1640	·057	1709	·076	1564	·072
1792		1783	·067	1718	·062	1830	·08	1600	·074
1882		1903	·069	1796	·064	1949	·082	1777	·078
1960		2026	.073	1864	·068	2069	·087	1867	·082
2041		2104	·074	1952	·071	2189	·092	1957	·084
2127		2197	·08	2042	·075	2225	·093	2020	·086
2220		2283	·084	2165	·08	2324	·095	2086	·089
2325		2361	·087	2234	·083	2402	·098	2109	·095
2403		2439	·09	2304	·086	2468	·099	2181	·098
2469		2499	·093	2373	·088	2534	·103	2259	·102
2538*		2565	·096	2449	·091	2600	·107	2329	·105
2604		2635	·098	2515	·094	2705	·112	2395	·108
2673		2701	·102	2581	·096	2771	·114	2464	·111
2745		2767	·105	2649	·099	2837	·117	2536	·116
2868		2836	·108	2715	·102	2921	·121	2602	·118
2991		2905	·11	2781	·104	2984	·124	2668	·121
3071		2971	Broke	2847	Broke	3053	·127	2737	·124
3140		and not the bolt.				3129	·13	2806	·127
Broke.						3195	·134	2872	·129
						3251	Broke	2938	·133
								3002	·136
								3068	Broke
									·139
								When all unloaded the needle stood at ·22.	

Sound Casting.

* A crick one minute after loading.
† Unloaded to springing.
‡ Remained a quarter of an hour.

K.—Transverse Strain on Two simple Rectangular Beams, cast in one casting, 1½ inch apart, connected by cross ties, &c., same as Experiment I, but trussed as per sketch annexed, or from *two points*.

The strain taken *within* the line of compression; the pressure applied in the same way, &c.; bearings similar.

No. 9 Experiment. Weight, 126 oz.		No. 10 Experiment. Weight, 130 oz.		No. 11 Experiment. Weight, 136 oz.	
Pressure in lbs.	Deflection.	Pressure in lbs.	Deflection.	Pressure in lbs.	Deflection.
*220	·01	220	·012	220	·01
313	·015	313	·018	313	·013
403	·018	403	·024	403	·017
490	·021	493	·028	493	·022
567	·025	598	·033	580	·025
657	·028	691	·037	673	·028
744	·032	‡784	·04	760	·031
†834	·035	874	·044	847	·035
924	·038	961	·048	934	·038
1014	·042	§1048	·052	1054	·043
1119	·045	1135	·055	1174	·048
1197	·048	1222	·059	1267	·052
1317	·053	1309	·062	1372	·056
1437	·056	1396	·065	1450	·057
1509	·06	1480	·068	1522	·06
1602	·063	1561	·072	1594	·063
1677	·067	1642	·075	1684	·067
1764	·068	1720	·078	1771	·07
1842	·073	1798	·083	1858	·072
1926	·077	1876	·086	1942	·076
2004	·08	1954	·09	2023	·081
2082	·084	2026	·093	2101	·085
2166	·088	2146	·099	2179	·088
2247	·093	2229	·104	2257	·092
2325	·097	2301	·108	2338	·097
2394	·1	2370	·112	2409	·1
2472	·104	2439	·113	2497	·104
2538	·107	2520	·118	2563	·107
2604	·11	2586	·121	2629	·11
2670	·114	2655	·123	2695	·114
2736	·117	2725	·127	2761	·117
2802	·119	2791	Broke.	2827	·12
2868	Broke.			2893	·123
				2959	·125
				3025	·128
				3091	·132
				3154	·135
				3217	·138
				3283	·14
				3319	·143
				3415	Broke.

* When all released off except the lever and scale, the tension bolt holding up the broken beam, the deflector showed ·025.
† When the scale was unloaded to this point, the lever was free from the prop on which it fell, after fracture of the beam, and the deflector shewed ·43.
‡ Bolt carried after fracture.
§ Left for ten minutes. The lever at fracture fell only 1 inch, not breaking the bolt. When all unloaded, the bolt sustained a deflection of ·238.

Drury-lane. GEORGE B. COOPER.

LINCOLN CATHEDRAL AND THE SHOWMAN.

"Art gives us nobler loves and nobler cares; furnishing objects by the contemplation of which we are taught and exalted, and so are ultimately led to seek beauty in its highest form, which is *Goodness*."

SIR,—It was with a mind fully cogitating on the sentiment which I have just quoted, and to which my attention was called by THE BUILDER of the 6th ult., that I approached the west front of Lincoln Minster; and, as I stood before the glorious pile, first observing the grandeur of the mass, and then attending to the exquisite finish of each shapely stone,—finish surpassed only by Nature, the "mistress of the art,"—it seemed to me more like an efflorescence of the natural rock than any embodiment of man's imagination. "Yes," I exclaimed, "art shows us man as he can be known by no other means." These words were still upon my lips, and I stood within the building, and even then the pealing anthem seemed to say the same, and with a voice well worthy such a building.

But, sir, let me call your attention from the cathedral to its officers, the verger and his sub-official, and to inform you—if, indeed you are not too well aware—what kind of reception you are to expect when you next make a pilgrimage to Lincoln Cathedral. After the morning service, and while several persons as well as myself were lingering in the nave, a large man, whose black dress and red face proclaimed his official character, inquired of me, "Do you wish to see the cathedral?"—to which I replied, "No; I have not time at present." In a few minutes he returned and told me he wished to lock the doors, and that I must go away; and, on my quietly telling him there were still many people in the cathedral, and that he could not lock them in, he said,—"You must not tell me my business, sir; I am doing my duty."

On the next day I repeated my visit, and after service the verger found a party of visitors, upon whom he forced his services as showman of the cathedral. Whilst he was thus busy I hoped quietly to enjoy the use of my sight, without the interposition of him whose very proximity seemed to destroy my pleasure; but, no sooner had I commenced a serious examination, casting off the awe and distraction of such a multiplicity of images, than a beautifully-imagined piece of foliage required my sketch-book; and, so busy was I in my occupation, that I heard not the verger's approaching footstep, till he stood suddenly before me. "Do you belong to this party, sir?" "No."—"How did you get in, sir?" "I shall not answer."—"Have you permission to sketch, sir?" "No." "Then I cannot allow it; I must do my duty."

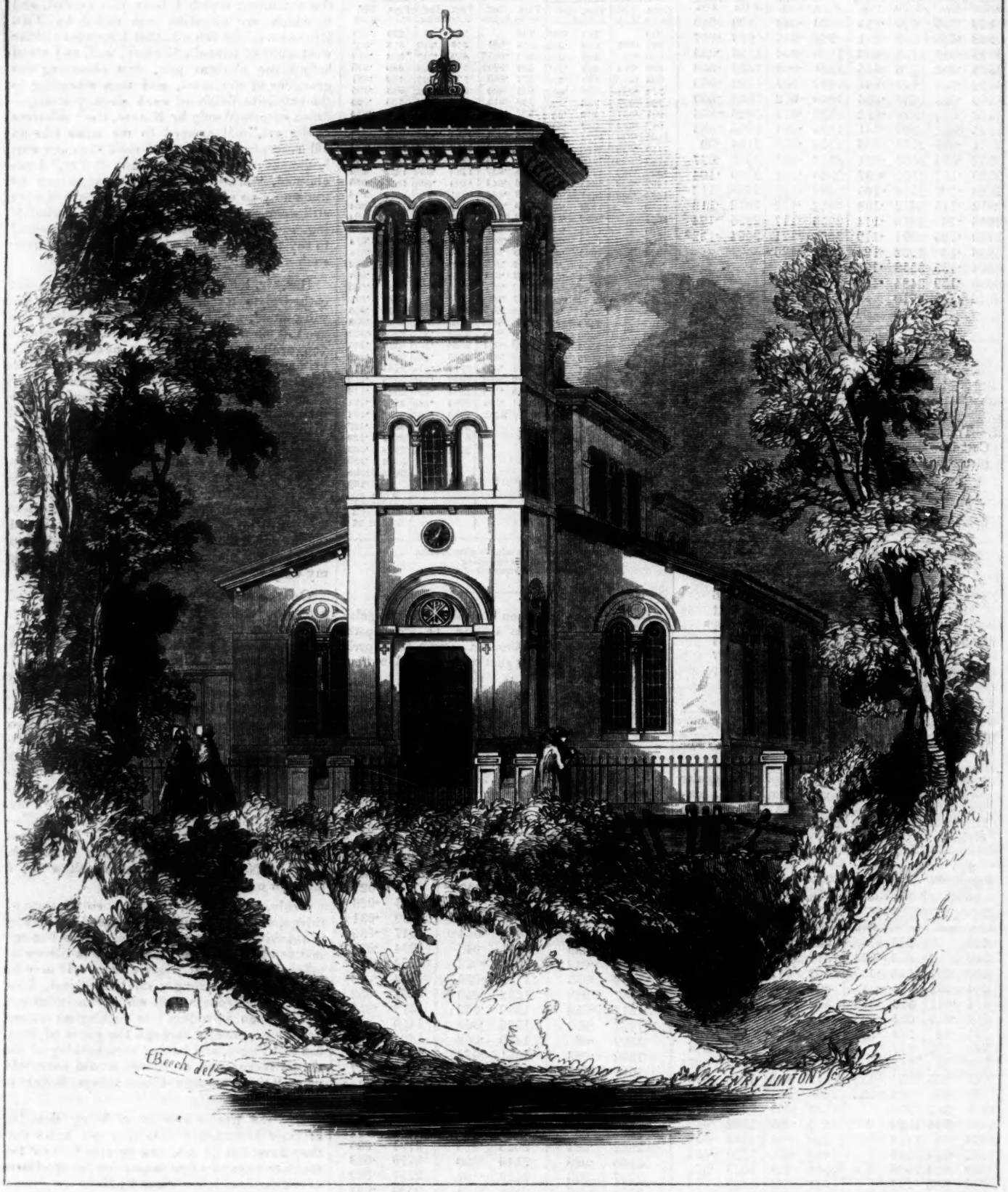
Truly, Mr. Editor, this *is* a rotten state of things, and the people of England are wrong in thinking that exclusive dealing has become matter of history, or that "the insolence of office" is a tale of bygone days. It may be that I feel too strongly on the subject, from the unexpectedness with which it assailed me, having been introduced to no English cathedral before, except through the pages of Britton and Pugin, and having seen nothing of the matter there; and as Sterne would have told you, "they manage these things better in France."

Are the people careless of being denuded of their birthright? Do they not know that they have but to ask and receive? Is it too much to require a free inspection for all classes of monuments left to *them* by their ancestors? I hope, Mr. Editor, that you will insert the above plain narration, and the questions which seem honestly to arise from it; for I think you will agree with me, that if reform ever was needed, it is needed here; and I should rejoice if the possessors of our high Protestant places would but emulate a tithe of the liberality which the Pope of Rome has lately exhibited; we should then have no further cause of complaint. It may be serviceable to state that before I left Lincoln I restored the verger's equanimity by permitting him to "show" the cathedral, and by purchasing of him a few plaster casts which he keeps for the accommodation of those who have not "permission to sketch," and yet who wish to preserve a memento of the cathedral.—I am, Sir, &c.

Dec. 7, 1847. AN AMATEUR.

NEW ROMAN CATHOLIC CHURCH, SURBITON, SURREY.

MR. CHARLES PARKER, ARCHITECT.



NEW ROMAN CATHOLIC CHURCH AT SURBITON, SURREY.

THIS church, which is situated on the banks of the river Thames, near the populous town of Kingston, is built of Bath stone; it consists of a western tower, a nave, north and south aisles, a chancel, with tribune and sacristies.

The entrance is in the tower, as shewn in the engraving. In the arch above the door, there appears the Greek form or monogram of the cross, as sculptured on sarcophaguses of the first ages of Christianity. The plan of the tower is square; it measures 16 feet at its base, and the whole height, including the cross, is 78 feet. A cast-iron screen runs across the inner part, and forms the entrance porch. On each side of the inner doorway are stoups, the bowl and shaft made of Italian marble. In one corner there is a small staircase, reaching to the organ loft, which is open to the nave, as high as the clock chamber. From this there is an easy ascent to the belfry, where, by an arrangement of the machinery, the clock strikes the angulus bell at the proper hours.

The nave consists of three compartments; the length is 45 feet, the height 43 feet, and the width, including the aisles, 44 feet. The pedestals, pillars, and entablatures supporting the arches, are of Portland stone; over each arch there are windows of three lights, forming a clerestory. The roofs, framed with beams and rafters, are open to the ceiling; each principal rests upon a moulded and enriched corbel; all the roofs are covered with tiles made from a model obtained from Florence. The eastern gable rises considerably above the chancel, and supports a belfry for the sanctus bell. The floor is laid with red and white hexagonal tiles; the benches are low and open; the walls are decorated with coloured monograms, as found in the catacombs of the first Christians. At the western end of the north aisle the font is fixed; the bowl and shaft are of Italian marble; the cover is of oak, framed in four compartments.

The chancel, raised one step above the ordinary level of the church, and separated by a wrought-iron railing, is 22 feet in length, and the same width as the nave; the height is 37

feet; the roof is open to the ceiling, as before described. On the north, east, and south sides there are windows, each composed of three lights; in these openings coloured glass will be inserted. The wall immediately over the east window is enriched by a gilt cross. The pavement, three steps, and platform, are laid with Sicilian marble; the altar and tabernacle, both free from the wall, are of the same material; the altar is enriched with festoons of flowers, sculptured in Italy; the door of the tabernacle is an ancient carved oak panel, probably of the thirteenth century; it represents the crucifixion, and is a work of great interest. The sedilia are of oak, with carvings on the backs of the seats. The pulpit adjoins the sanctuary, and is placed round the last column of the nave; it is octagonal in plan and of Sicilian marble. The tribune is separated from the chancel by an open screen. The vault for the founder is under the sanctuary.

On the north side of the church, and communicating with the sacristies, there is a residence for the priest, attached to which is a sufficient piece of ground for a garden. On the south side there are schools for boys and girls, with separate play-grounds. At the east end the cemetery is placed, in the centre of which an iron cross is erected.

The church is on the estate of Mr. Alexander Raphael, the present member for St. Albans, who has given the ground, and at his sole charge erected and endowed the whole of the buildings for the benefit of the poor. The architect is Mr. Charles Parker, and the builder Mr. John Dickson.

VENTILATION OF DWELLING-HOUSES.

Sir,—I was glad to see, in the last number but one of The Builder, a suggestion of your correspondent "A." for the ventilation of apartments in a simple and inexpensive manner. I have often thought how easily a similar plan, and nearly as economical, might be adopted in all new-built dwelling-houses, were the necessity of proper ventilation more felt by those engaged in building occupations. The plan I would suggest is, to carry up in the brick or stonework of the chimney-breast of each room, a common earthen pipe of about 1¼ or 2 inches diameter, commencing it above the fireplace, in any position, so as to be within 4½ inches of the flue of such fireplace. Into each of these pipes, on a level with the joist above the ceiling, I would introduce one made of zinc or tin, continuing the same along the joist to a funnel in the centre of the room, exactly in the same manner proposed by your correspondent "A." The earthen pipes from each room, on working up the chimney stack, might be brought together between the flues and carried to the top with them. It will be evident these will become heated sufficient to cause a current and draw off the foul air from the rooms. The additional width required to the chimney for the purpose would be but of trifling cost compared with the benefit derived. The earthen pipes also can be obtained at about one penny per foot run, as those made for agricultural purposes will answer as well as more expensive ones.—P.

THE LATE MR. J. A. BRANDON.

On Saturday last, the 11th inst., occurred the death of Mr. J. Arthur Brandon, a young architect of much promise, at the early age of twenty-six. The zeal and ability with which he pursued his profession, in conjunction with his elder brother, Mr. Raphael Brandon, had occasioned the commencement of a practice which must have become extensive, particularly in the branch of English church architecture. The loss is felt by his professional acquaintances with increased sorrow, on account of his personal conduct as a gentleman. Those who knew him best speak the most highly of him. Most of our readers have a knowledge of the valuable works produced by the Messrs. Brandon—"The Analysis of Gothic Architecture," "Parish Churches," &c.—and will grieve with us in hearing of this loss to the profession. In the midst of life we are indeed in death. Let us each humbly strive to fit ourselves for the coming time.

CURIOUS PEW-END AT WENDEN CHURCH, ESSEX.

CARVED PEW-END, WENDEN CHURCH, ESSEX.

The old church at Wenden, whence the carved pulpit already engraved in No. 248 of our journal was obtained, contains the subjoined curious example of grotesque ornament, which forms the corner post of the old pews that fill the chancel. This post is a solid beam of oak, measuring six inches on each face, and the animal on the summit is cut from the solid wood. It appears to represent a hyæna, who is grinning at his face reflected in the mirror at his feet. It is an amusing instance of the taste for the ludicrous, occasionally to be met with in internal church decoration of the middle ages. The opposite corner of the pew has had a similar ornament, but that has disappeared.

THE IRON TRADE.

How are the mighty fallen! The position of those 'great masters,' who were carrying all before them this time last year, is declared by one of their own most stanch upholders, to present 'a deplorable reverse of the activity that has prevailed during the last two years. Twelve months ago every work was in operation, workmen scarcely to be obtained, orders superabundant—specifications almost preceding them—and no suspicions crossing the mind, of difficulty to be encountered in meeting liabilities. Now, we find confidence at the lowest possible ebb, a palpable stagnation of business, and instead of orders and specifications—countermands and complaints. Quality not suitable—sizes not exact—delivery not punctual—quantity exceeded—or, where no excuse presents itself, an unblushing avowal of inability to pay—form the burthen of each succeeding post; while week after week works are partially closed or brought to an absolute stand-still. Many new works, also, and additional erections, with a vast amount of machinery, have been prepared, without the slightest prospect of their now being brought into operation.'

During the past month, says an influential broker connected with the trade, 'the iron market has undergone a further depression, chiefly owing to the stoppage of railway works, and the continued pressure in the money market. This trade, which for two or three years past has been highly prosperous, is now about to undergo a change evidently for the worse. Some large makers have already suspended payment, throwing a great number of men out of employment; and rumours are rife, that unless the trade is better supported, much mischief may take place both in Staffordshire and at Glasgow. The demand for all kinds of iron has greatly decreased, while the stocks are accumulating. In some degree to meet the case, iron masters are making arrangements to lessen the make, and reduce the wages of their workmen. A sale of 2,000 tons of rail made within the last week, is said to have realized a price equivalent to not more than 7*l.* per ton in Wales. Scotch pig-iron is gradually declining; and so low as 47*s.* 6*d.* to 48*s.* per ton, cash, for mixed numbers has been accepted by holders in Scotland.'

The iron-stone miners of South Staffordshire, says a still more recent authority, 'as well as the furnace men engaged in several large firms around Dudley, received notice on Saturday night last of a reduction of twenty per cent. in the amount of their wages. Short time is being generally adopted, and many iron-masters have determined to suspend operations altogether for the present. A meeting of iron-masters was held at Wolverhampton on Wednesday, when a resolution similar to the above was unanimously agreed to, so that the reduction of wages will become general throughout South Staffordshire.'

St. Mark's Church, Wolverhampton: Mad Builders.—We have been favoured with the amount of tenders for erecting St. Mark's Church, opened last Saturday; Mr. C. W. Orford, architect:—

Higham and Son.....	£7,491	2	9
Clarke.....	5,290	1	8
Robinson (accepted)	4,850	0	0!!

Repeal of the Window-Tax.—The delegates appointed by all the metropolitan parishes met on Friday in last week to consider the steps necessary to be taken "for enforcing upon the Government the necessity of an immediate repeal of the window-tax, without which they have themselves declared any measure of sanitary reform an absurdity." Lord Duncan pledged himself to leave no stone unturned in the House, and the following resolution was passed:—"That it is the opinion of this meeting that no measure of sanitary reform can be effective or useful unless accompanied by a repeal of the most obnoxious and unhealthy impost of the window duties." Meetings should be called in every parish to consider this subject, and to exhibit the feeling which prevails.

LECTURES AND MEETINGS ON THE GAS MOVEMENT.

While adverting, briefly for the present, to a recent lecture of Mr. Wright's, in the Westminster Mechanics' Institution, we may just instance the evidence which the 'Progress at Slough,' detailed in last week's Builder, affords of the power which lecturers possess of forwarding any great movement of so popular and universal an interest as the gas movement is, and more particularly will be. The hint, we are assured, will not be thrown away on so intelligent, nay, talented, and laborious a class of men as we know professional lecturers to be. We do believe that a fairer, a wider, a more fruitful subject-field than this for popular lecturing throughout England and Scotland at this moment, probably does not exist. It is a subject which, directly and sensitively, affects the pockets and the comforts of the million, and these are ever the lecturer's surest stronghold and stay. The lecture of Mr. Wright, however, did not so much relate to the economics or statistics of gas as to its history, and, indeed, the history of artificial light in general. Any portions of it for which we may find room in The Builder, will be most appropriately introduced in connection with the subject of the domestic uses of gas.

A literal multitude, it appears, of gas consumers, would-be gas consumers, and others interested, flocked to the Southwark Literary Institution, Borough-road, on Friday evening of last week, in prompt response to the advertisement announcing a public meeting on the 'gas movement.' 'The matter,' observes the *Morning Advertiser*, 'seemed to excite very lively and general interest, as, before the time appointed for taking the chair, the large theatre of the Institution was nearly filled, and in the course of the evening became inconveniently crowded, hundreds being unable to obtain admittance.'

As we were not present, we cannot say much about the evidence and arguments adduced, but we perceive from the reports in the *Times*, *Post*, *Advertiser*, &c., that they were mainly our own, and the respectability and importance of the meeting were authenticated by the presence of an M.P., Mr. Pearson, as their chairman. Mr. Thwaites is said to have 'entered [we here quote chiefly from the condensed report in the *Times*] into a long and able statement as to the cost of producing gas. He adverted to the fact of nearly all the principal towns in Yorkshire being supplied at the rate of 3s. 3½d. per 1,000 cubic feet, and to the fact that even in the very large manufacturing towns the price did not exceed 4s. to 4s. 6d. The gas companies had consented to lower their charges from 8s. to 7s. per 1,000 feet; but that was not enough, for the same gas that they were to pay 7s. for, and for which they at present paid 8s., was supplied at Greenwich by the same company at 6s., and to all the railways and other large consumers at 5s. 6d. per 1,000 feet. All the eastern end of the town was supplied at 6s., and why were they to pay more? At the Wakefield House of Correction all the gas consumed was manufactured by the prisoners, and the cost of it was only 5½d. per 1,000 feet.* These were surely facts strong enough to induce them to have their gas supplied at 6s., or to form a consumers' company themselves.' The gas movement, he added, was becoming a most important one, and it would ere long take a strong hold on the public mind, in consequence of the vast amount of the interest involved. Looking to that large meeting, he would say to the gas directors, strike while hot, and do not let the dissatisfaction go further, or the time will come when 6s. will not satisfy. He was beginning to feel discontented with it himself.

The chairman then entered into a statement as to the origin of the gas companies, and remarked, that the competition between them had only caused two or three lines of pipe to be laid down in districts where there was hardly occasion for one. [Such, indeed, as we have ourselves remarked, has hitherto been the almost sole result of that 'wasteful competition' which the monopolists have themselves 'compelled' by their own blind resistance to what they *could* have well done, but *would* not do, for the public interest,—which, as we have always maintained, will be found to be identical with their own.] These lines of pipe constituted a great part of the capital of the companies, and yet their profits upon it—upon that unnecessary outlay—were enormously high. If any gas bill appeared in the House of Commons, he should insist upon the insertion of a clause contained in the Act for the first of all chartered gas companies—passed in 1810—a clause which was afterwards repealed—to the effect that parochial authorities shall have it in their power to purchase the pipes of a company on a valuation by two surveyors, if the company fail to supply a sufficient quantity or quality of gas at a moderate price. If he understood the object of this meeting aright, it was to shew gas directors that if they take an enlarged and comprehensive view of their private interests, they will find that they are coincident with those of the public. Gentlemen interested in the companies had been invited, and would, he felt convinced, receive a fair hearing. A gas contractor, in course of the discussion which followed the chairman's opening address, assured the meeting that the whole question resolved itself into that of the price of coals. [This same question, it will be found in an ensuing number of The Builder, we had incidentally discussed in the second portion of a recent article, intended to have occupied the place of the present notice.]

Two resolutions were proposed and carried by acclamation, expressive of the determination of the meeting to effect a reduction in the price of gas, appointing a committee to act for them, and pledging themselves to support them.

* It has been publicly alleged, on the part of the companies, that in our original notice of this 'secret of the gas-house,' we made 'no allowance' for salaries and wages, rent, tear and wear of apparatus, fuel under the retorts, capital invested, &c.; and we are flippantly asked 'why' we 'omitted to refer to them?' We did not omit to refer to them: we expressly alluded to them. 'To be sure,' we remarked, 'that is exclusive of servants' wages, and even, in all probability, of interest on outlay for apparatus and for repairs; but let us suppose that the Wakefield House of Correction gas were sold to the public at 4s. 6d., (the actual price charged by the Wakefield Gas Company itself, by the way! except to 'large consumers,' who are only charged 3s. 9), to cover these expenses, even in that case, no less than about *ten hundred per cent.* beyond the actual cost of the gas so sold would be saddled on the public, in order to cover the mere outlay for wages, and repairs, and interest, or dividends.' Now this exposition took place in August last, while the organ of the monopolists was in full fig, and yet the public are told, God save the mark!—that it was 'during the two months' suspension of the literary and scientific departmen;' of that publication that we *contrived* to do so! We began to enlighten the public mind on this important subject, as our readers well know, long before that publication was originated by our own endeavours, and we have had no reason to feel even in the slightest degree daunted ever since, as our continued and persistent endeavours will clearly show. We were ready to reply to any objection wearing the semblance of truth and candour, especially from that quarter; but 'correspondents' or 'investigators,' who have nothing more worthy to produce than this, can only be recognised for once—the more especially as there is otherwise much misrepresentation and error or rash assertion, some of which is even coolly acknowledged in a postscript, where it is admitted that the charge of omitting to make allowance for the fuel used under the retorts is erroneous, and that the coal for fuel costs only 3s. 6d. per ton, while the coke produced in the retorts sells for 9s. 6d. per ton'—a fact which we have ourselves long ago noticed as an evidence that the mere cost of coal is *no criterion* of the price which ought to be charged to the public for gas, and that in many cases gas companies actually gain enormously, even by the very consumption of their coal.

RAILWAY JOTTINGS.

The Bury station of the Eastern Union line is nearly finished from a design by Mr. Sancton Wood, the contracts under Mr. Brassey being taken by Mr. Ogilvie for the main buildings, and by Mr. Trevethan for the shed roof. Its style is Elizabethan, the materials being red and white brick, with stone dressings. Built on a steep acclivity, the pay office is under the rails, and is 54 feet by 36, the ceilings supported by cross iron girders, with moulded ribs and groins, carried by eight iron columns. The platform is covered by a roof in three spans, supported by two lines of twelve iron columns each, 20 feet in height, and trussed with king and queen posts, but without tie-beams, having skylights and steam-louvres along the whole extent, and finished below with carved pendants. The dimensions of the shed are 260 feet by 84, breadth of each platform nearly 15 feet, with four lines of rail between them. Two towers, seventy feet high, are erected at the eastern extremity, for a contrivance to raise and lower the luggage to and from the platform: in these the clock and bell are to be placed. The whole extent of the station is 320 feet by 120, the south façade appearing with Elizabethan gables and grotesque finials, perforated balustrade, and bay windows with ornamental lead lights.——The great Liverpool tunnel is likely to prove more expensive than was at first contemplated. The cutting of a portion to Great Howard-street has been attempted underground; but such has been the ill success, that some of the houses, not only immediately over the cuttings, but at some distance from them, have given way. It is therefore believed that the houses in the streets will have to be pulled down.——The Leeds and York is being re-laid with new rails, chairs, and sleepers. The rail is of new invention, and is considered an improvement on the old, the surface being convex, and presenting much less surface to the wheel, thereby much reducing the friction,—a great desideratum it is thought, and certainly is,—except in peril of collision, or in frost or thaw, or heavy trainage.——A party, amongst whom was Mr. Macgregor, the chairman of the South Eastern Railway, started from Paris on Sunday week, and reached London in twelve hours and fifty minutes.——A meeting of delegates of France, Prussia, and Belgium, was opened on the 7th inst. at Brussels, under the presidency of the Belgian Minister of Public Works, to arrange an international correspondence on the different lines of railway which unite these three kingdoms.

THE SUSPENSION OF WORKS.

Thousands and tens of thousands of discharged labourers are now roaming about the country idle, and rushing into the metropolis, hesitating not a moment on the way to enter bakers' or other provision shops, and consume the property therein 'upon the premises,' some reckless of all consequences, others by design to provide themselves with board and lodging at the public expense, in prisons rather than in workhouses. The magistrates at some of the metropolitan police courts have been also applied to for assistance on behalf of the more honest or less desperate portion of them: the majority are already literally penniless. In several places, such as at Neath, where the suspension has only recently taken place, the poor fellows have been lounging about the streets and roads in crowds for a whole week, as if waiting patiently for some hopeless job. For the last three weeks one contractor alone there has discharged fifty men each week, and several others are now at a stand; as are now, also, the works on the Huddersfield and Manchester, which there does not appear to have been any intention to suspend, at least on the part of the directors,—the contractors, Messrs. Nowell and Hattersley, having themselves suspended the works, as the *Manchester Guardian* states, in consequence of a heavy balance in their favour remaining unpaid by the company, whom they are about to proceed against at law. Both at the Huddersfield and the Stalybridge end, accordingly, the workmen have been paid off during the past week.——Mr. A. Stafford, M.P., has given notice in the Commons that he feels it his duty to call the attention of the House to the present condition of the labouring classes.——A contemporary proposes something like a modification of Mr. Weale's proposal to turn navvies into armies. "As a preventive against the men becoming burdensome, he suggests that they should be at liberty to enter regiments of engineers, to be disciplined by the ensuing spring, and sent to the colonies to make roads, railroads, &c.; their rations, in the first instance, to be provided by Government. Such as consent, he adds, might afterwards be located along the lines in wooden houses, to be built in the Canadian style, and women might be sent out as emigrants, or free settlers, and married men take their wives; the expense to be repaid on settlement by a trifling rent, sufficient to pay it off in twenty years or so." 200,000 persons might thus, he thinks, be annually sent out, instead of 20,000, as at present.

Great Iron Bridge for Russia.—A contract having been entered into between the Russian Government and Mr. Vignoles, engineer, for an iron suspension-bridge, to be erected over the Dnieper, [at Kieff, the first shipment of machines and ironwork was lately made at Liverpool, in the British barque, *Flirt*, Mr. A. Dove, master. The articles shipped consist of various massive pieces of iron, of prepared forms, in packages numbered from 1 to 320, and weighing in all 274 tons. They consist of sheeting pile and foundation pile-weights, 5-inch diameter shafts and couplings, cylindrical pieces and stands, with bolted pedestals, besides fourteen cases of bolts and nuts. They have been prepared at a foundry at Bolton, and are consigned to Odessa, whence they will be drawn by bullock-carts 400 miles, to Kieff.

NOTES IN THE PROVINCES.

While the taste for Gothic architecture, which has of late revived throughout the country, has led to the restoring and the beautifying of our magnificent cathedrals (says the *Norfolk Chronicle*), the churches of our villages have also shared in the improvement. The churches at Fincham, at Runcton, at Holme, and at several other places, have lately been entirely re-pewed with open sittings, thus doing away with invidious distinction between rich and poor. Great improvement has also been made in the church at Marham. Besides a new roof, executed by Mr. James Taylor, the Villebois family has otherwise contributed liberally to the adornment of this church. One of the windows in the aisle (which from time immemorial had been nearly blocked up), has been re-opened, new mullions added, and the whole glazed with painted glass by Mr. Warrington; and we hear, adds our authority, that it is the intention of Mr. Villebois also to give two more stained glass windows, and that Mr. Warrington is now employed in executing them. The parishioners, too, intend putting the other windows into thorough repair.——The church of Heydon, in the same county, though said to be always kept in good order, has lately undergone extensive alteration, including repairs to the roof and a new east window of five lights, in harmony with the general style of the fabric. To the latter improvement, H. M. the Queen Dowager, Mr. W. E. L. Bulwer, and others, have contributed. The seats have also been re-arranged—square pews superseded by open benches—the old pulpit restored, and the chancel, with a new oak reredos and stalls, has assumed, adds the *Chronicle*, an appearance which we should wish to see imitated in the neighbouring churches of Salle, Cawston, and Aylsham.——A general appeal has been issued for the means of restoring the ancient round tower of All Saints' Church, Belton, Suffolk, which the Rev. A. Suckling, in "Memorials of the Antiquities of the County of Suffolk," now in the course of publication, describes as comprising a nave and chancel, 'with a circular tower at the west end, long ruinated;' the edifice otherwise, whic his 'constructed of cut flints,' being in good condition. The foundations of this old tower, respecting the erection of which nothing whatever is known by tradition or otherwise, are said to be entire; enough remaining to shew that it was one of the circular towers by no means uncommon in Norfolk and Suffolk, and to determine also its circumference and thickness of the walls. The estimate of expense (including the removal of a wooden belfry over the south porch) is 360*l.* The Bishop of Norwich, Lord Boston, Magdalen College Oxford, &c., have already contributed upwards of 150*l.* towards the end in view.——The Exeter Water Company have offered to supply water gratis to the baths and washhouses about to be established at Exeter.——West Lavington Church, re-opened by the Bishop of Salisbury on Tuesday week before last, has undergone a thorough restoration. The south transept has been given up by the Churchill family for additional seats, 200 of which, made of oak and low elevation, have been gained, notwithstanding the demolition of the galleries. The whole edifice has been re-roofed, and the nave roof restored to its original pitch, after the model of Ely Cathedral roof, and in oak. The east window is described as being now 'rich with dim religious light.' The windows, too, of the north transept and western end of the church, and a small early English one in the east gable of the nave, have been filled-in by Mr. Powell. The whole expense will not amount, it is said, to more than 1,600*l.*, 1,400*l.* of which have been realized. The repair of the tower is also spoken of.——On Tuesday week, the united committees for the erection of a lunatic asylum for Hereford, Monmouth, Brecon, and Radnor, met at Abergavenny, where the building is to be erected, for the furtherance of preliminary measures, such as the appointment of Mr. Thomas Fulljames, of Gloucester, as architect for the intended asylum, the appointment of a clerk, at 50*l.* per annum, during the erection of the building, and of a sub-committee, to select a proper site, with the assistance of the architect. The proposed asylum is to be adapted for the accommodation of 200 patients, with power to increase.——The ancient church of Kinwarton, near Alcester, restored by the Rev. R. Seymour, has been re-opened. The style of restoration is simple, without much decoration. The chancel-floor has been laid with Minton's tesselated tiles, in a circular design. The rood-screens, pulpit, priests' stalls, &c., are carved in oak. The east window, made by Mr. O'Connor, of London, is of stained-glass. The ceiling is of oak, shewing principals and timbers; and the body of the church has been repewed with open and free sittings. Mr. W. Butterfield was the architect employed; and Messrs. Miles and Son, of Stratford-on-Avon, builders, executed the designs.——The sureties of the late Mr. Walthew, the contractor for the new gaol at Birmingham, have offered 3,000*l.*, with costs, in full discharge of their alleged liability of about 3,469*l.*; but one of the town-councillors, Mr. J. B. Payn, determined not to allow the sureties to outdo the council in generosity or at least in justice, proposed an amendment on the motion for approval and acceptance of the offer, to the effect, that 2,000*l.* be received in full of all demands, 'that sum, together with the amount of 1,500*l.* already retained by the committee from Mr. Walthew, being the whole amount stipulated to be paid by the bond in default of the completion of the contract.' It was observed on the other hand, however, that the corporation or the rate-payers were 'losers to the extent of 2,000*l.* by the new contract which they had to make, owing to the advance in labour and materials;' and the amendment was ultimately negatived, and the original resolution carried. The sureties, on their part, allege that they were additional and heavy losers, by advances to the contractor on the faith of insurance from loss, by a sum retained by the committee as security, and which a member of committee himself assured them would render their risk only nominal, but which the committee appear to have expended in carrying on the building themselves, when the contractor fell a victim to his inability to fulfil 'the bond,' by which the committee themselves, whether from advance in labour and materials or 'their own superintendence,' have been the less personal and more fortunate losers. They seem to consider it necessary to explain, that they were prevented from refusing to accept Mr. Walthew's bond in the outset by a regard for his business reputation.

SOCIETY OF ARTS.

December 1.—Mr. Wm. Wyon, R.A., in the chair.

Five specimens of painting on glass, by M. De Ron, of Munich, were exhibited. The secretary stated that the colours used by M. De Ron are glasses of different degrees of hardness, care being taken in using them never to put a harder upon a softer metal. Also, he uses both sides of the glass: this enables him to obtain clearness and decision of colour. Mr. Hall offered some remarks on the history and manufacture of stained glass, and exhibited several specimens of modern manufacture.

Mr. S. Moulton exhibited a model of an iron truss railway bridge, the invention of Mr. Rider, of New York. Mr. Moulton stated that the directors of the New York and Harlem Railroad have erected a bridge on this principle, the span of it being 70 feet, and having a double track or roadway upon it, and the whole weight of metal used in its construction weighs only thirteen tons, while its cost was under 500*l.*

A paper was read by Mr. Archer on Engraving, with reference to monumental brasses and incised stones. The author commenced by referring to the very early period at which the art of engraving appears to have been known and practised by the lapidary and goldsmith, and the probability that those to whom the art was known were subject to a precise code of laws and connected with the priestly office, these laws having the effect of regulating the productions according to a given standard set up by the heads of their order, thus giving a singular uniformity to the numerous examples of antique art, whether in painting, sculpture, or engraving. After alluding to the Egyptian, Etruscan, Greek, and Roman specimens of engraving, and similarity, and common origin, he proceeded to point out the various purposes to which the art of engraving on brass was employed, such as the representation of geographical diagrams.

In the time of Herodotus edicts and public records were sometimes inscribed on brass tablets, a striking instance of which occurs in the preservation, down to the present time, of the will and acts of the Emperor Augustus. Having touched upon some few instances of the ancient practice of the caleographic art, the author proceeded to detail some particulars of that process as it appeared at the general revival of art during the middle ages. In the eighth century, by a law of Kenneth, king of Scotland, it was enjoined that a cross should be put on every gravestone, *i. e.*, coffin lid, and this appears to have been done in three ways,—firstly, by the use of incised lines drawn round the object; secondly, by producing the form in low relief; and thirdly, by a wholly excised figure. The use of sepulchral brasses appears to have originated with the general revival of art in the thirteenth century; one of the earliest specimens is that of Sir Roger de Trompington, who died in 1289. The brasses of the fourteenth and fifteenth centuries contain, besides the effigies of warriors, churchmen, ladies, and civilians, many examples of beautiful decoration, derived from the architectural practice of the time; different combinations of the letters I. H. S., composing the sacred monogram, appear in the brasses of the fifteenth and beginning of the sixteenth century. In the sixteenth century, at the time of the Reformation, these sacred monuments appear to have become obnoxious, and were accordingly swept out of the churches with an unsparing hand, few (comparatively) having escaped destruction. Of some of these, however, the author produced rubbings, and having traced the history down to the nineteenth century, and referred to the latest of that period (prior to those produced under his own direction), proceeded to urge the desirableness of possessing, as a nation, a complete collection of the rubbings of the brasses of this country, as illustrative of the costume and history of bygone times, and the propriety of such a collection being deposited in the British Museum.

FIRST PROCEEDINGS OF NEW SEWERS' COMMISSIONERS.

The first general court of the Commissioners of Sewers, appointed in pursuance of the recommendation of the Metropolitan Sanitory Commissioners under the great seal, was held on Thursday, in committee-room, No. 8, House of Commons. Present—The Right Hon. Lord Morpeth, M.P., in the chair; the Right Hon. Lord Ashley, M.P., Mr. J. Walter, M.P., Hon. F. Byng, Sir E. Buxton, M.P., Mr. R. A. Slaney, M.P., Dr. Southwood Smith, Mr. Bullar, Mr. J. Leslie, Mr. E. Chadwick, Professor Owen, Mr. Hulton, Mr. R. L. Jones, Mr. J. Broderip, Rev. W. Stone, and Mr. W. Puckle.

Several commissioners were sworn in for the St. Katharine's division, and also for the divisions of Kent and Surrey, and Greenwich.

The minutes of a preliminary meeting held at Gwydyr House were read and confirmed.

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The suggestion of the right hon. chairman was unanimously agreed to.

The proposed Survey of the entire Metropolis.—Lord Morpeth called upon the clerk, Mr. C. Hertslet, to read the report of Mr. Chadwick and Sir H. De la Beche, appointed to consider the subject of a general survey of the metropolis, which was as follows:—

"It having been determined to apply to the Board of Ordnance for assistance in obtaining an early survey of the metropolis, and it having been specially referred to us to consider what particulars might be inserted in such survey, we have the honour to report:—

That at the request of Lord Morpeth we obtained a conference with the Master General of the Ordnance, and explained to him the general position of the several sewers' districts in the metropolis, and the need of immediate aid. The Master-General expressed to us the

LECTURES AND MEETINGS ON THE GAS MOVEMENT.

While adverting, briefly for the present, to a recent lecture of Mr. Wright's, in the Westminster Mechanics' Institution, we may just instance the evidence which the 'Progress at Slough,' detailed in last week's Builder, affords of the power which lecturers possess of forwarding any great movement of so popular and universal an interest as the gas movement is, and more particularly will be. The hint, we are assured, will not be thrown away on so intelligent, nay, talented, and laborious a class of men as we know professional lecturers to be. We do believe that a fairer, a wider, a more fruitful subject-field than this for popular lecturing throughout England and Scotland at this moment, probably does not exist. It is a subject which, directly and sensitively, affects the pockets and the comforts of the million, and these are ever the lecturer's surest stronghold and stay. The lecture of Mr. Wright, however, did not so much relate to the economics or statistics of gas as to its history, and, indeed, the history of artificial light in general. Any portions of it for which we may find room in The Builder, will be most appropriately introduced in connection with the subject of the domestic uses of gas.

A literal multitude, it appears, of gas consumers, would-be gas consumers, and others interested, flocked to the Southwark Literary Institution, Borough-road, on Friday evening of last week, in prompt response to the advertisement announcing a public meeting on the 'gas movement.' 'The matter,' observes the *Morning Advertiser*, 'seemed to excite very lively and general interest, as, before the time appointed for taking the chair, the large theatre of the Institution was nearly filled, and in the course of the evening became inconveniently crowded, hundreds being unable to obtain admittance.'

As we were not present, we cannot say much about the evidence and arguments adduced, but we perceive from the reports in the *Times*, *Post*, *Advertiser*, &c., that they were mainly our own, and the respectability and importance of the meeting were authenticated by the presence of an M.P., Mr. Pearson, as their chairman. Mr. Thwaites is said to have 'entered [we here quote chiefly from the condensed report in the *Times*] into a long and able statement as to the cost of producing gas. He adverted to the fact of nearly all the principal towns in Yorkshire being supplied at the rate of 3s. 3½d. per 1,000 cubic feet, and to the fact that even in the very large manufacturing towns the price did not exceed 4s. to 4s. 6d. The gas companies had consented to lower their charges from 8s. to 7s. per 1,000 feet; but that was not enough, for the same gas that they were to pay 7s. for, and for which they at present paid 8s., was supplied at Greenwich by the same company at 6s., and to all the railways and other large consumers at 5s. 6d. per 1,000 feet. All the eastern end of the town was supplied at 6s., and why were they to pay more? At the Wakefield House of Correction all the gas consumed was manufactured by the prisoners, and the cost of it was only 5½d. per 1,000 feet.* These were surely facts strong enough to induce them to have their gas supplied at 6s., or to form a consumers' company themselves.' The gas movement, he added, was becoming a most important one, and it would ere long take a strong hold on the public mind, in consequence of the vast amount of the interest involved. Looking to that large meeting, he would say to the gas directors, strike while hot, and do not let the dissatisfaction go further, or the time will come when 6s. will not satisfy. He was beginning to feel discontented with it himself.

The chairman then entered into a statement as to the origin of the gas companies, and remarked, that the competition between them had only caused two or three lines of pipe to be laid down in districts where there was hardly occasion for one. [Such, indeed, as we have ourselves remarked, has hitherto been the almost sole result of that 'wasteful competition' which the monopolists have themselves 'compelled' by their own blind resistance to what they *could* have well done, but *would* not do, for the public interest,—which, as we have always maintained, will be found to be identical with their own.] These lines of pipe constituted a great part of the capital of the companies, and yet their profits upon it—upon that unnecessary outlay—were enormously high. If any gas bill appeared in the House of Commons, he should insist upon the insertion of a clause contained in the Act for the first of all chartered gas companies—passed in 1810—a clause which was afterwards repealed—to the effect that parochial authorities shall have it in their power to purchase the pipes of a company on a valuation by two surveyors, if the company fail to supply a sufficient quantity or quality of gas at a moderate price. If he understood the object of this meeting aright, it was to shew gas directors that if they take an enlarged and comprehensive view of their private interests, they will find that they are coincident with those of the public. Gentlemen interested in the companies had been invited, and would, he felt convinced, receive a fair hearing. A gas contractor, in course of the discussion which followed the chairman's opening address, assured the meeting that the whole question resolved itself into that of the price of coals. [This same question, it will be found in an ensuing number of The Builder, we had incidentally discussed in the second portion of a recent article, intended to have occupied the place of the present notice.]

Two resolutions were proposed and carried by acclamation, expressive of the determination of the meeting to effect a reduction in the price of gas, appointing a committee to act for them, and pledging themselves to support them.

* It has been publicly alleged, on the part of the companies, that in our original notice of this 'secret of the gas-house,' we made 'no allowance' for salaries and wages, rent, tear and wear of apparatus, fuel under the retorts, capital invested, &c.; and we are flippantly asked 'why' we 'omitted to refer to them?' We did not omit to refer to them: we expressly alluded to them. 'To be sure,' we remarked, 'that is exclusive of servants' wages, and even, in all probability, of interest on outlay for apparatus and for repairs; but let us suppose that the Wakefield House of Correction gas were sold to the public at 4s. 6d., (the actual price charged by the Wakefield Gas Company itself, by the way! except to 'large consumers,' who are only charged 3s. 9), to cover these expenses, even in that case, no less than about *ten hundred per cent.* beyond the actual cost of the gas so sold would be saddled on the public, in order to cover the mere outlay for wages, and repairs, and interest, or dividends.' Now this exposition took place in August last, while the organ of the monopolists was in full fig, and yet the public are told, God save the mark!—that it was 'during the two months' suspension of the literary and scientific department' 'of that publication that we *ventured* to do so!' We began to enlighten the public mind on this important subject, as our readers well know, long before that publication was originated by our own endeavours, and we have had no reason to feel even in the slightest degree daunted ever since, as our continued and persistent endeavours will clearly show. We were ready to reply to any objection wearing the semblance of truth and candour, especially from that quarter; but 'correspondents' or 'investigators,' who have nothing more worthy to produce than this, can only be recognised for once—the more especially as there is otherwise much misrepresentation and error or rash assertion, some of which is even coolly acknowledged in a postscript, where it is admitted that the charge of omitting to make allowance for the fuel used under the retorts is erroneous, and that the coal for fuel costs only 3s. 6d. per ton, while the coke produced in the retorts sells for 8s. 6d. per ton'—a fact which we have ourselves long ago noticed as an evidence that the mere cost of coal *is no criterion* of the price which ought to be charged to the public for gas, and that in many cases gas companies actually *gain* enormously, even by the very consumption of their coal.

RAILWAY JOTTINGS.

The Bury station of the Eastern Union line is nearly finished from a design by Mr. Sancton Wood, the contracts under Mr. Brassey being taken by Mr. Ogilvie for the main buildings, and by Mr. Trevethan for the shed roof. Its style is Elizabethan, the materials being red and white brick, with stone dressings. Built on a steep acclivity, the pay office is under the rails, and is 54 feet by 36, the ceilings supported by cross iron girders, with moulded ribs and groins, carried by eight iron columns. The platform is covered by a roof in three spans, supported by two lines of twelve iron columns each, 20 feet in height, and trussed with king and queen posts, but without tie-beams, having skylights and steam-louvres along the whole extent, and finished below with carved pendants. The dimensions of the shed are 260 feet by 84, breadth of each platform nearly 15 feet, with four lines of rail between them. Two towers, seventy feet high, are erected at the eastern extremity, for a contrivance to raise and lower the luggage to and from the platform: in these the clock and bell are to be placed. The whole extent of the station is 320 feet by 120, the south façade appearing with Elizabethan gables and grotesque finials, perforated balustrade, and bay windows with ornamental lead lights.——The great Liverpool tunnel is likely to prove more expensive than was at first contemplated. The cutting of a portion to Great Howard-street has been attempted underground; but such has been the ill success, that some of the houses, not only immediately over the cuttings, but at some distance from them, have given way. It is therefore believed that the houses in the streets will have to be pulled down.——The Leeds and York is being re-laid with new rails, chairs, and sleepers. The rail is of new invention, and is considered an improvement on the old, the surface being convex, and presenting much less surface to the wheel, thereby much reducing the friction,—a great desideratum it is thought, and certainly is,—except in peril of collision, or in frost or thaw, or heavy trainage.——A party, amongst whom was Mr. Macgregor, the chairman of the South Eastern Railway, started from Paris on Sunday week, and reached London in twelve hours and fifty minutes.——A meeting of delegates of France, Prussia, and Belgium, was opened on the 7th inst. at Brussels, under the presidency of the Belgian Minister of Public Works, to arrange an international correspondence on the different lines of railway which unite these three kingdoms.

THE SUSPENSION OF WORKS.

Thousands and tens of thousands of discharged labourers are now roaming about the country idle, and rushing into the metropolis, hesitating not a moment on the way to enter bakers' or other provision shops, and consume the property therein 'upon the premises,' some reckless of all consequences, others by design to provide themselves with board and lodging at the public expense, in prisons rather than in workhouses. The magistrates at some of the metropolitan police courts have been also applied to for assistance on behalf of the more honest or less desperate portion of them: the majority are already literally penniless. In several places, such as at Neath, where the suspension has only recently taken place, the poor fellows have been lounging about the streets and roads in crowds for a whole week, as if waiting patiently for some hopeless job. For the last three weeks one contractor alone there has discharged fifty men each week, and several others are now at a stand; as are now, also, the works on the Huddersfield and Manchester, which there does not appear to have been any intention to suspend, at least on the part of the directors,—the contractors, Messrs. Nowell and Hattersley, having themselves suspended the works, as the *Manchester Guardian* states, in consequence of a heavy balance in their favour remaining unpaid by the company, whom they are about to proceed against at law. Both at the Huddersfield and the Stalybridge end, accordingly, the workmen have been paid off during the past week.——Mr. A. Stafford, M.P., has given notice in the Commons that he feels it his duty to call the attention of the House to the present condition of the labouring classes.——A contemporary proposes something like a modification of Mr. Weale's proposal to turn navvies into armies. "As a preventive against the men becoming burdensome, he suggests that they should be at liberty to enter regiments of engineers, to be disciplined by the ensuing spring, and sent to the colonies to make roads, railroads, &c.; their rations, in the first instance, to be provided by Government. Such as consent, he adds, might afterwards be located along the lines in wooden houses, to be built in the Canadian style, and women might be sent out as emigrants, or free settlers, and married men take their wives; the expense to be repaid on settlement by a trifling rent, sufficient to pay it off in twenty years or so." 200,000 persons might thus, he thinks, be annually sent out, instead of 20,000, as at present.

Great Iron Bridge for Russia.—A contract having been entered into between the Russian Government and Mr. Vignoles, engineer, for an iron suspension-bridge, to be erected over the Dnieper, at Kieff, the first shipment of machines and ironwork was lately made at Liverpool, in the British barque, *Flirt*, Mr. A. Dove, master. The articles shipped consist of various massive pieces of iron, of prepared forms, in packages numbered from 1 to 320, and weighing in all 274 tons. They consist of sheeting pile and foundation pile-weights, 5-inch diameter shafts and couplings, cylindrical pieces and stands, with bolted pedestals, besides fourteen cases of bolts and nuts. They have been prepared at a foundry at Bolton, and are consigned to Odessa, whence they will be drawn by bullock-carts 400 miles, to Kieff.

NOTES IN THE PROVINCES.

While the taste for Gothic architecture, which has of late revived throughout the country, has led to the restoring and the beautifying of our magnificent cathedrals (says the *Norfolk Chronicle*), the churches of our villages have also shared in the improvement. The churches at Fincham, at Runcton, at Holme, and at several other places, have lately been entirely re-pewed with open sittings, thus doing away with invidious distinction between rich and poor. Great improvement has also been made in the church at Marham. Besides a new roof, executed by Mr. James Taylor, the Villebois family has otherwise contributed liberally to the adornment of this church. One of the windows in the aisle (which from time immemorial had been nearly blocked up), has been re-opened, new mullions added, and the whole glazed with painted glass by Mr. Warrington; and we hear, adds our authority, that it is the intention of Mr. Villebois also to give two more stained glass windows, and that Mr. Warrington is now employed in executing them. The parishioners, too, intend putting the other windows into thorough repair.——The church of Heydon, in the same county, though said to be always kept in good order, has lately undergone extensive alteration, including repairs to the roof and a new east window of five lights, in harmony with the general style of the fabric. To the latter improvement, H. M. the Queen Dowager, Mr. W. E. L. Bulwer, and others, have contributed. The seats have also been re-arranged—square pews superseded by open benches—the old pulpit restored, and the chancel, with a new oak reredos and stalls, has assumed, adds the *Chronicle*, an appearance which we should wish to see imitated in the neighbouring churches of Salle, Cawston, and Aylsham.——A general appeal has been issued for the means of restoring the ancient round tower of All Saints' Church, Belton, Suffolk, which the Rev. A. Suckling, in "Memorials of the Antiquities of the County of Suffolk," now in the course of publication, describes as comprising a nave and chancel, 'with a circular tower at the west end, long ruinated;' the edifice otherwise, whic his 'constructed of cut flints,' being in good condition. The foundations of this old tower, respecting the erection of which nothing whatever is known by tradition or otherwise, are said to be entire; enough remaining to shew that it was one of the circular towers by no means uncommon in Norfolk and Suffolk, and to determine also its circumference and thickness of the walls. The estimate of expense (including the removal of a wooden belfry over the south porch) is 360*l.* The Bishop of Norwich, Lord Boston, Magdalen College Oxford, &c., have already contributed upwards of 150*l.* towards the end in view.——The Exeter Water Company have offered to supply water gratis to the baths and washhouses about to be established at Exeter.——West Lavington Church, re-opened by the Bishop of Salisbury on Tuesday week before last, has undergone a thorough restoration. The south transept has been given up by the Churchill family for additional seats, 200 of which, made of oak and low elevation, have been gained, notwithstanding the demolition of the galleries. The whole edifice has been re-roofed, and the nave roof restored to its original pitch, after the model of Ely Cathedral roof, and in oak. The east window is described as being now 'rich with dim religious light.' The windows, too, of the north transept and western end of the church, and a small early English one in the east gable of the nave, have been filled-in by Mr. Powell. The whole expense will not amount, it is said, to more than 1,600*l.*, 1,400*l.* of which have been realized. The repair of the tower is also spoken of.——On Tuesday week, the united committees for the erection of a lunatic asylum for Hereford, Monmouth, Brecon, and Radnor, met at Abergavenny, where the building is to be erected, for the furtherance of preliminary measures, such as the appointment of Mr. Thomas Fulljames, of Gloucester, as architect for the intended asylum, the appointment of a clerk, at 50*l.* per annum, during the erection of the building, and of a sub-committee, to select a proper site, with the assistance of the architect. The proposed asylum is to be adapted for the accommodation of 200 patients, with power to increase.——The ancient church of Kinwarton, near Alcester, restored by the Rev. R. Seymour, has been re-opened. The style of restoration is simple, without much decoration. The chancel-floor has been laid with Minton's tesselated tiles, in a circular design. The rood-screens, pulpit, priests' stalls, &c., are carved in oak. The east window, made by Mr. O'Connor, of London, is of stained-glass. The ceiling is of oak, shewing principals and timbers; and the body of the church has been repewed with open and free sittings. Mr. W. Butterfield was the architect employed; and Messrs. Miles and Son, of Stratford-on-Avon, builders, executed the designs.——The sureties of the late Mr. Walthew, the contractor for the new gaol at Birmingham, have offered 3,000*l.*, with costs, in full discharge of their alleged liability of about 3,469*l.*; but one of the town-councillors, Mr. J. B. Payn, determined not to allow the sureties to outdo the council in generosity or at least in justice, proposed an amendment on the motion for approval and acceptance of the offer, to the effect, that 2,000*l.* be received in full of all demands, 'that sum, together with the amount of 1,500*l.* already retained by the committee from Mr. Walthew, being the whole amount stipulated to be paid by the bond in default of the completion of the contract.' It was observed on the other hand, however, that the corporation or the rate-payers were 'losers to the extent of 2,000*l.* by the new contract which they had to make, owing to the advance in labour and materials;' and the amendment was ultimately negatived, and the original resolution carried. The sureties, on their part, allege that they were additional and heavy losers, by advances to the contractor on the faith of insurance from loss, by a sum retained by the committee as security, and which a member of committee himself assured them would render their risk only nominal, but which the committee appear to have expended in carrying on the building themselves, when the contractor fell a victim to his inability to fulfil 'the bond,' by which the committee themselves, whether from advance in labour and materials or 'their own superintendence,' have been the less personal and more fortunate losers. They seem to consider it necessary to explain, that they were prevented from refusing to accept Mr. Walthew's bond in the outset by a regard for his business reputation.

SOCIETY OF ARTS.

December 1.—Mr. Wm. Wyon, R.A., in the chair.

Five specimens of painting on glass, by M. De Ron, of Munich, were exhibited. The secretary stated that the colours used by M. De Ron are glasses of different degrees of hardness, care being taken in using them never to put a harder upon a softer metal. Also, he uses both sides of the glass: this enables him to obtain clearness and decision of colour. Mr. Hall offered some remarks on the history and manufacture of stained glass, and exhibited several specimens of modern manufacture.

Mr. S. Moulton exhibited a model of an iron truss railway bridge, the invention of Mr. Rider, of New York. Mr. Moulton stated that the directors of the New York and Harlem Railroad have erected a bridge on this principle, the span of it being 70 feet, and having a double track or roadway upon it, and the whole weight of metal used in its construction weighs only thirteen tons, while its cost was under 500*l.*

A paper was read by Mr. Archer on Engraving, with reference to monumental brasses and incised stones. The author commenced by referring to the very early period at which the art of engraving appears to have been known and practised by the lapidary and goldsmith, and the probability that those to whom the art was known were subject to a precise code of laws and connected with the priestly office, these laws having the effect of regulating the productions according to a given standard set up by the heads of their order, thus giving a singular uniformity to the numerous examples of antique art, whether in painting, sculpture, or engraving. After alluding to the Egyptian, Etruscan, Greek, and Roman specimens of engraving, and similarity, and common origin, he proceeded to point out the various purposes to which the art of engraving on brass was employed, such as the representation of geographical diagrams.

In the time of Herodotus edicts and public records were sometimes inscribed on brass tablets, a striking instance of which occurs in the preservation, down to the present time, of the will and acts of the Emperor Augustus. Having touched upon some few instances of the ancient practice of the caleographic art, the author proceeded to detail some particulars of that process as it appeared at the general revival of art during the middle ages. In the eighth century, by a law of Kenneth, king of Scotland, it was enjoined that a cross should be put on every gravestone, *i. e.*, coffin lid, and this appears to have been done in three ways,—firstly, by the use of incised lines drawn round the object; secondly, by producing the form in low relief; and thirdly, by a wholly excised figure. The use of sepulchral brasses appears to have originated with the general revival of art in the thirteenth century; one of the earliest specimens is that of Sir Roger de Trompington, who died in 1289. The brasses of the fourteenth and fifteenth centuries contain, besides the effigies of warriors, churchmen, ladies, and civilians, many examples of beautiful decoration, derived from the architectural practice of the time; different combinations of the letters I. H. S., composing the sacred monogram, appear in the brasses of the fifteenth and beginning of the sixteenth century. In the sixteenth century, at the time of the Reformation, these sacred monuments appear to have become obnoxious, and were accordingly swept out of the churches with an unsparing hand, few (comparatively) having escaped destruction. Of some of these, however, the author produced rubbings, and having traced the history down to the nineteenth century, and referred to the latest of that period (prior to those produced under his own direction), proceeded to urge the desirableness of possessing, as a nation, a complete collection of the rubbings of the brasses of this country, as illustrative of the costume and history of bygone times, and the propriety of such a collection being deposited in the British Museum.

FIRST PROCEEDINGS OF NEW SEWERS' COMMISSIONERS.

The first general court of the Commissioners of Sewers, appointed in pursuance of the recommendation of the Metropolitan Sanitory Commissioners under the great seal, was held on Thursday, in committee-room, No. 8, House of Commons. Present—The Right Hon. Lord Morpeth, M.P., in the chair; the Right Hon. Lord Ashley, M.P., Mr. J. Walter, M.P., Hon. F. Byng, Sir E. Buxton, M.P., Mr. R. A. Slaney, M.P., Dr. Southwood Smith, Mr. Bullar, Mr. J. Leslie, Mr. E. Chadwick, Professor Owen, Mr. Hulton, Mr. R. L. Jones, Mr. J. Broderip, Rev. W. Stone, and Mr. W. Puckle.

Several commissioners were sworn in for the St. Katharine's division, and also for the divisions of Kent and Surrey, and Greenwich.

The minutes of a preliminary meeting held at Gwydyr House were read and confirmed.

Lord Morpeth then rose and said, that he wished to mention to the court, that he was of opinion that it would be desirable that a bill should be drawn up to assimilate the powers of this commission in the whole of the districts intrusted to their care. He would not, however, occupy the attention of the court further upon it, as it would be a matter for legislative consideration.

The suggestion of the right hon. chairman was unanimously agreed to.

The proposed Survey of the entire Metropolis.—Lord Morpeth called upon the clerk, Mr. C. Hertslet, to read the report of Mr. Chadwick and Sir H. De la Beche, appointed to consider the subject of a general survey of the metropolis, which was as follows:—

"It having been determined to apply to the Board of Ordnance for assistance in obtaining an early survey of the metropolis, and it having been specially referred to us to consider what particulars might be inserted in such survey, we have the honour to report:—

That at the request of Lord Morpeth we obtained a conference with the Master General of the Ordnance, and explained to him the general position of the several sewers' districts in the metropolis, and the need of immediate aid. The Master-General expressed to us the

desire of the department to render every assistance in their power, provided funds were supplied to enable them to act. At his suggestion we drew up the heads for an estimate of the expense of the required work.

Viewing the great importance of speed in obtaining such particulars as might enable the works for house and street drainage to be carried on with safety, and in preventing unnecessary interruptions in the public works, we directed our attention to the particulars usually inserted in the Ordnance survey of 60 inches to the mile for towns, and we endeavoured to determine which of these particulars might be omitted for immediate purposes.

Having marked on a specimen sheet the particulars which we thought it absolutely necessary to obtain in the first instance, in addition to the triangulation, with the aid of the Board of Ordnance, we drew up a paper of inquiries with a view to ascertain the expense of the survey in separate stages, some of which might be delayed until the immediate requirements of the survey are completed, and others of which it might be found an eligible course to have completed, with the aid of the officers of the commission.

These heads of estimates have been transmitted by Lord Morpeth to the Master-General of the Ordnance; and, when they are returned, we shall be prepared to report further on the subject.

(Signed) H. T. De la Beche.
E. Chadwick.

December 16, 1847."

The clerk next read several statements on the subject of the accounts, and a letter from Alderman Musgrove, as chairman of the late Tower Hamlets' Commission, setting forth that, as soon as a guarantee from responsibility was given as to the funds, and the disposal of the court-house in Great Alie-street, all accounts should be handed over to the commissioners.

A messenger from this commission attended; and, an order being made, the accounts were handed in, as were those from the Surrey and Kent, and Greenwich divisions.

It was also reported that the amount of funds at present in hand, of the combined divisions, amounted to 32,839*l*.

A report was presented from the committee of accounts, stating that considerable difficulty existed as to placing the accounts, both as regarded the Bank of England and any private bank; but a joint-stock bank company had expressed a desire to give them every facility, as soon as arrangements for the same were made.

It was then agreed that further time should be granted to the committee for the custody of the funds.

The surveyors, Messrs. Phillips and Roe, presented reports that a number of men had been employed in flushing and cleansing cesspools, particularly in Turnmill-street, and that this had been effected by the use of the ordinary fire-engines, the hose of which had been inserted in the place proposed to be discharged; and, by the use of Sir William Burnett's chloride of zinc, all odour arising therefrom had been completely destroyed.

In answer to questions by Mr. Chadwick, the surveyors stated that the relative expense of cleansing would be one-sixth of the old mode. From one cesspool alone they had removed 20 cube yards of soil, and they believed they should be enabled to expedite the work so much more, that two men would be able to cleanse an ordinary cesspool in one hour.

Mr. Slaney—Then, by this means, shall you be enabled to cleanse the drains of houses, through narrow passages, at 500 yards distance, of all offensive matter, without inconvenience to the inhabitants?

The surveyors said it would be perfectly practicable.

Mr. Chadwick—Is it your opinion that cesspools can be done away with?

The surveyors said, that in the case of Turnmill-street, where there were twenty-three houses in one small court, an efficient sewer could be formed at the cost of 2*l*. 2*s*. per house, with an annual charge of 3*s*. per house.

Mr. Slaney—Then, am I to understand that, according to your estimate, an efficient drainage and supply of water can be obtained at one-fifth that of the present system?

The surveyors said such would be the case with a constant supply of water, and not, as at present, where water was not always supplied.

Lord Morpeth said, in reference to the amount of charges, it would be advisable to embody the subject in the new bill to be laid before Parliament.

Mr. R. L. Jones was of opinion that a *pro-ratâ* principle should be adopted, and parties not be compelled to bear the expense of improvements where, perhaps, only a short interest existed.

The subject was then ordered to be brought forward at the next court.

Mr. Hertslet, the clerk, reported that the Chelsea, Hampstead, and other water companies, had each made offers of the most liberal description to supply the commission with abundant supplies of water, at cost price.

The Hon. Frederick Byng bore testimony to the willingness of the water companies to supply water almost gratuitously.

Mr. Slaney thought an answer should be returned to the water companies, acknowledging the liberal terms offered by them.

Lord Morpeth said he had no doubt the members of the committee would collect the feelings of the court, and transmit the same to the various companies.

At this stage of the business Lord Morpeth stated that, in consequence of engagements, he was unable to remain till the *agenda* had been gone through, and hoped some other member would be appointed to the chair.

It was then proposed, and unanimously agreed to, that Lord Ashley do take the chair for the remainder of the business.

The Hon. Frederick Byng drew the attention of the court to some of the worst courts and places he had seen lately—and those within 50 yards of the Sewers' Court in Greek-street; he alluded particularly to Dudley-court and Barnett's-buildings, where, within three months, several houses had been pulled down, and small ones rebuilt, but no arrangement had been made for any drainage whatever. He therefore moved that, as no provision had been made for drainage, the clerk do serve notices on the parties, under the Act 10 & 11 Victoria, and do pursue a similar course whenever he may deem it necessary.

The surveyor said the place was in a most frightful condition, and that the premises were glebe property, belonging to the vicar of St. Giles's.

Mr. Slaney made a few remarks on the motion, which was put and carried unanimously.

The following resolutions were then unanimously adopted, as the mode of action of the new commission:—

"That the surveyors be directed to take immediate measures for the flushing and cleansing of the sewers, and, when practicable, of the cesspools, preferring, in the first instance, proceeding with the courts, alleys, and worst-conditioned streets and places chiefly occupied by the poorer classes.

That for this purpose the surveyors be authorised to obtain additional supplies of water from the water companies, and to engage any additional assistants and labourers requisite, till further orders. That they be empowered to act on the orders entered into in respect to cleansing works from the several other districts.

That a committee, consisting of the following commissioners, be authorised to aid the officers with information, and to communicate with local boards having charge of works of paving and cleansing, and invite their co-operation to proceed at the same time with works for surface-cleansing, viz.:—

Hon. F. Byng,	Dr. Arnott,
Sir James Clark,	Mr. Bullar,
Mr. Chadwick,	Rev. W. Stone.
Mr. Leslie,	

That the surveyors be directed to forward such works now in progress as are of immediate and pressing necessity, and as will not require to be undone, and are not inconsistent with an amended system of sewers and drains worked by regulated supplies of water, and as may be safely proceeded with before the completion of a general survey.

That, in respect to works now in progress which are inconsistent with a system of sewers and drains acting by regulated supplies of water, or which may not safely be carried on without a survey, the surveyors are ordered to give directions for having them stopped, and openings of the roadway which interfere with the public traffic immediately made good. That the surveyors now appointed be directed to make an immediate report on works for which contracts have been entered into.

That the surveyors consider forthwith as to the covering up of any open sewers or ditches which appear to be dangerous to the public health, and that they report thereon immediately.

That application be immediately made to her Majesty's Board of Ordnance to direct a survey for the district on the larger scale of the survey recently made of Liverpool, Manchester, and other towns in Lancashire and in Yorkshire.

That Sir Henry De la Beche and Mr. Chadwick be authorised to report respecting the insertion of such particulars in the survey as may best adapt it for the requirements of the public service; and that they, and Mr. Richard Lambert Jones, be deputed to invite the commissioners for the city of London to join in the application.

That Mr. Stable prepare a summary of the state of the accounts, of the contracts, liabilities, and state of the expenditure, the outstanding rates, income, and assets, for the early information of the commissioners.

That Mr. Hertslet prepare a collection of the bye-laws and orders in force in the several districts; and, with assistance, obtain a digest of the several local and general Acts which embody the law of sewers, for the information of the commissioners.

That a committee for general purposes be appointed, to whom it be referred specially to examine and report on the duties of the several officers and servants, and the present extent of public service requiring to be performed, and on the best means of providing for it, and for the keeping of the accounts and custody of the funds. That this committee be requested to meet from time to time on the progress of the business of the commission, and summon any extraordinary meeting of the court when occasion requires it.

That this committee consist of the following commissioners:—

Hon. F. Byng,	Mr. Bidwell,
Mr. Hume,	Mr. Broderip,
Mr. Chadwick,	Mr. Bullar.
Mr. Leslie,	

That the Committee for General Purposes be required to report as soon as possible what steps ought to be taken for opening the accounts of the commission with the Bank of England."

A great number of letters were read from different parties complaining of want of drainage, and the court then adjourned.

HEALTH OF TOWNS.

A numerous and influential anniversary meeting of the Health of Towns Association was held on Saturday last at the Hanover-square Rooms, the Marquis of Normanby in the chair, supported by a body of members of Parliament, and other noblemen and gentlemen. Deputations attended from Bradford, Derby, Liverpool, Sheffield, Wolverhampton, Halifax, Stafford, Preston, Plymouth, East Retford, Manchester, Newcastle-upon-Tyne, and other important towns. Apologies for absence were received from Lord John Russell, the Duke of Buccleugh, Lord Morpeth, the Earl of Shelburne, the Bishop of Norwich, and a number of M.P.s and other supporters of sanitary reform.

The chairman opened the meeting by a speech in which the sincerity of his advocacy of the same good cause was very obvious. He urged the necessity of a prompt and vigorous support, although he believed that from the knowledge of its necessity which the public was at length acquiring, it would now stand upon its own merits. He did not mean to blame either the friends of this great cause, or the Government, who had already contributed both influentially and beneficially to this reform. A report full of sound, substantial, and admirable suggestions had been as vigorously acted upon by the Executive as it was wisely designed by the Legislature. He must regret, however, that at a time when this country—and this great metropolis—were in expectation of the visitation of cholera, it was still the fact that experience had been in vain acquired, information in vain collected, and improvements in vain suggested. The

labours of the Commission, too, he admitted, might be objected to, because their report states that the improvements which were to be effected have been postponed for another year; but many useful facts had been confirmed, the result of much scientific study concentrated, and, as it were, guaranteed, and rendered indisputable, by that report; and in these advantages they must be content to waive an unavailing regret for this much complained-of delay. The association and he were resolved that the people should no longer suffer from want of pure air and the light of heaven; and surely the labouring classes were entitled to the same protection from vital injury that was given to even inanimate machinery! In the parish of St. Saviour, Southwark, the average duration among the gentry was 47, tradesmen, 25, artisans, 22, and amongst the lowest, 15. This was an enormous disproportion in the average of human life in the same district, and which must be attributed to causes within the power of man to prevent. Besides the more obvious causes of this difference, deprival of light and the operation of the window-tax must be admitted; but he hoped the public would give such a powerful and moral support to a willing Government as would overcome all opposition; and he could assure them that that opposition, when met and overcome, would be found by them to have been utterly contemptible in its nature and amount.

Lord Ashley then proposed the first of a series of resolutions in favour of immediate and general sanitary legislation, approving of her Majesty's earnest recommendation from the throne, and of the Chancellor's reformation of the sewers' commissions, recommending the combination of local with central administration, and appealing to the clergy and medical faculty to aid in the removal of ignorance and apathy on so vital a subject. The first resolution was seconded by Dr. Guy, who regretted that no preparations had been made to meet the cholera. The fever-trap, the filth-trap, and the cholera-trap were one and the same. The Legislature were now called upon to do for the honest and worthy labouring classes what they had long since done for criminals in prisons throughout the country. He was happy to find such writers as Disraeli and Dickens giving a place to sanitary reform in their popular and fashionable writings. —Mr. James Heywood recommended improved sewers of pipe-clay and widened streets.—Lord Ebrington remarked, that in all towns where want of cleanliness prevailed, there was a craving for artificial spirits, caused by the depressing influence of the very atmosphere itself, and which defied the advocates of temperance and total abstinence.—Mr. R. A. Slaney stated, that in fifty towns, the condition of which he had inquired into, no less than forty-eight were deficient in drainage and supply of water. He felt that education was useless and inept in the midst of filth, and he believed that the educated and wealthy not only suffered from such causes but were led into intemperate habits from the same depressing influences.—Thanks were voted to the chairman before the meeting separated.

The City Remembrancer has given notice of an apparently comprehensive sanitary bill for the City, to be brought before Parliament. The sanitary reform movement is also progressing in the provinces, as at Gateshead, where sewers are to be extended, baths and washhouses established, and burial-grounds closed; at Sunderland, where a sanitary committee is at work, together with the corporation and the paving and lighting commissioners; at Alnwick, where a Board of Health is about to be established, and a medical officer has been exposing the 'frightful state' of the town; at Wigton, where a sanitary committee of inspection has been chosen; and at Edinburgh, where the whitening brush and besom are in active requisition, but where summary and extensive powers are much desired, as 'there is scarcely a close (or lane) privileged to have a drain.' At Glasgow, too, a Health of Towns Association is about to be established.

Admiralty Board of Science.—A correspondent of the *Morning Herald*, namely, "Tom Cringle," suggests the establishment of a Board of Science, to assist my Lords Commissioners of the Admiralty in all that regards marine or naval tactics, ship-building, nautical instruments, experiments on motion in fluids, &c.

THE PROBLEM BY "J. W." REPEATED.

Suppose (P) pounds raised one foot high per minute, represented the power required to roll a certain cylinder over a certain uniform inflexible road at a given rate. Also suppose (p) pounds raised one foot high per minute represented the power required to crush a certain uniform substance placed equally throughout upon that road. [That is, the power required to crush just so much of that substance in any given time as the cylinder came in contact with during that time].

Question.—Would (however great the diameter of the cylinder, and however great its weight) as much power as ($P+p$) pounds raised one foot high per minute, be required to roll the said cylinder on the said road over the said substance at the given rate, that substance being crushed thereby? In other words: would as much power be required to roll the cylinder at the given rate over the substance, crushing that thereby, as that required to perform both separately, namely, to crush the substance and roll the cylinder? Mathematical proof required.

If it be admitted that as little power would be wasted by this method of crushing as by any other, it necessarily follows that in any given time the power (p) pounds raised one foot per minute would be sufficient to roll a particular cylinder (whose weight was proportionable to the hardness, &c., of the substance to be crushed) over the required quantity of substance and thereby crush the same. But observe, by the question it is required to be determined what power would be required to roll any cylinder whatever at the given rate over the substance, that is, any cylinder sufficiently heavy to crush that substance. Now suppose the power required to roll any cylinder over a given quantity of that substance (placed as aforesaid) in a given time, be represented by ($P+x$) pounds raised one foot per minute, where P denotes the same as before,—

Question 2.—Would the value of x be less the greater the diameter of the cylinder (or the greater the value of P), supposing that the road, substance and rate of motion remained the same? J. W.

Dec. 3, 1847.

Correspondence.

EGG-SHAPED DRAIN-TUBES.

Sir,—It appears that Mr. Doulton registered, on the 11th October, 1847, an egg-shaped earthenware tube for sewers, thereby claiming it as his invention. The invention does not belong to him, nor is he entitled to claim from the public any benefit for the use of such sewers. Whatever credit there may be for the invention, belongs to me. (?) As surveyor to the Paving and Soughing Committee of the council of this city, I invented such sewers, and they have been for some time here used under my directions.

As you are aware, from observations made in your paper, the invention has been published many months prior to the above registration, and a great number of egg-shaped tubes of various sizes have been here used for the public drains of this city. Mr. Doulton is, therefore, not entitled to any exclusive benefit from the manufacture of egg-shaped tubes from such registration,—a fact which it may be of some importance to your readers to be made acquainted with.—I am, Sir, &c.,

J. Francis.

Town Hall, Manchester, Dec. 3, 1847.

RESTORATION OF LINGFIELD CHURCH.

Mr. Editor,—As you referred, in your last number, to the restoration of the interior of Lingfield Church, and as, from the fact of my name having been connected with the mural paintings found therein, it may naturally be inferred that such restoration was made by me, I should feel obliged by your allowing me to state, that, although the exterior, and, indeed, all the substantial work of the fabric, underwent extensive repair under my superintendence, yet, as I differed with the committee as to the arrangement of the interior, this part was not conducted by me.—I am, Sir, &c.,

Edward I'Anson, Jun.

Laurence Pountney-lane, Dec. 14, 1847.

Miscellanea.

The Royal Academy Medals.—On Friday, the 10th inst., the following distribution of premiums took place, viz.:—To Mr. J. E. Millais, for the best historical painting, the gold medal, and the Discourses of the Presidents Reynolds and West; to Mr. G. G. Adams, for the best historical group in sculpture, the gold medal, and the Discourses of the Presidents Reynolds and West; to Mr. Edward Ramsey, for the best architectural design, the gold medal, and the Discourses of the Presidents Reynolds and West; to Mr. William Proctor, for the best copy made in the school of painting, the silver medal, and the Lectures of the Professors Fuseli and Flaxman; to Mr. T. G. Duvall, for the best drawing from the life, the silver medal, and the Lectures of the Professors Fuseli and Flaxman; to Mr. F. Pickering, for the next best drawing from the life, the silver medal; to Mr. James Chester Lansdown, for the best architectural drawings of the entrance and interior of the Temple Church, the silver medal, and the Lectures of the Professors Fuseli and Flaxman; to Mr. C. Compton, for the best drawings from the antique, the silver medal, and the Lectures of the Professor Fuseli; to Mr. E. Eagles, for the next best drawing from the antique, the silver medal; to Mr. E. J. Physick, for the best model from the antique, the silver medal. In the class of architecture, the subject was "A Design for a Cathedral." Four competitors contributed in this class. For the silver medal there was but one competitor, who sent a set of nine architectural drawings of the Temple Church, comprising plans, elevation, sections, and perspective views.

Proposed Vandalism in the Priory Church, Christchurch.—Sir: The magnificent Priory Church of Christchurch, Twynham, exhibits many features of extraordinary interest. It would, perhaps, be impossible to point out a single church in which more can be found to interest and instruct the admirers and students of ecclesiastical architecture. The choir, now used as the chancel, exists with its stall-work perfect, and almost in the same condition as when left by the monks; it is inclosed at the east end by a stone reredos, or altar-screen, decorated with sculpture representing our Lord's descent from Jesse; at its east end is another screen, formerly called the rood-screen, also of stone, consisting of a double tier of canopied niches, elaborately and beautifully carved. The work is of the time of Edward the Third, which, though much mutilated, still excites the wonder and admiration of all who have the taste to appreciate such a work of art. *The destruction of this screen has been determined on by a committee*, appointed, I presume, for the improvement of this noble church. The time is past, Sir, at which such wanton acts of mischief could be perpetrated without remonstrance; and people's taste is too much improved to allow them to pass under the pretence of beautifying the fabric. It is really astonishing that at this day a set of men can be found who can resolve upon the destruction of any of the few remains of mediæval sculpture that have come down to us. When will parish vestries, committees, and corporate bodies, who have the charge of the ecclesiastical edifices of our land, learn that they are only the depositories of a sacred trust, and that their duty is to preserve, and not to destroy; that our generation has, as it were, only a life-interest in these things, and that we are bound to hand them on to posterity, at least in no worse condition than that we have received them in? Pray, Sir, raise your powerful voice, and prevent the threatened injury, if possible.—A.

Reform your Streets' Names.—The *Cork Examiner* recommends a new street nomenclature, suggesting "O'Connell-street," "Shiel-street," "Plunkett-street," as improved titles. We should like to see something of the kind in London. It seems hopeless, however, to expect the adoption of any names but those of modern celebrities, yet with that modification we should prefer "Southey" even to "Smith" square; while, out of the multiplicity of streets, rejoicing, if we may use the word, in the sponsorial appellation of "William," some one might gracefully add the patronymic of "Wordsworth." A Thomas-street, too, always provided it be a pleasant place, might be all the better for inserting after "Thomas" the word "Moore."—*Jerrold.*

A Christmas Present.—There seems no valid reason why we should be prevented from expressing our warm admiration of a charming story called "Midsummer Eve," just now published, by Mrs. S. C. Hall, albeit somewhat out of our path.* It is full of illustrations, full to overflowing, by Maclise, Stanfield, Creswick, Ward, Goodall, Frost, Noel Paton, Hulme, Landseer, Wehnert, Topham, Kenny Meadows, and others. As most of our readers must know, it was first given in the *Art-Union Journal*, but many engravings have been added. The perils which beset a young maid, the conflict of good and evil, are charmingly pourtrayed, and the refined taste, moral worth, and good heart of its excellent and accomplished author, which shine in every page, render it one of the most fitting presents for the youth of either sex, as eminently calculated for their improvement as their pleasure.

Victoria Park.—The Commissioners of Woods and Forests make the following statement in their report printed on Saturday respecting Victoria Park:—"The appendix, No. 21, contains a schedule of property purchased during the year ended the 5th of January last, under the authority of the Act 5 Vict., sec. 2, c. 20, to extend an Act passed in the fourth and fifth years of her present Majesty, for enabling her Majesty's Commissioners of Woods, &c. to purchase certain lands for Victoria Park, the purchase money for which property amounts to 425*l.*, making, with the sum of 82,898*l.* 3s. 1d. paid for former purchases, and the further sum of 3,975*l.* still due for a purchase already agreed for, but not completed during the period of this report, the sum of 87,298*l.* 3s. 1d., being the total cost of the property required for the site of this park, with the building ground attached thereto, exclusive of the expense of constructing the lodge, bridge, sewers, and roads, planting, fencing, and other works now in progress for the formation of the park; the amount paid in respect of which works, and of all other expenses relating to the park up to the 5th of January last, was 30,521*l.*, making the whole outlay to that date 117,819*l.* 3s. 1d." Since the last report, roads and plantations have been proceeded with, and an ornamental piece of water is now in course of formation. The outlay seems prodigious.

Rating Water Companies.—Lately the officers of the Grand Junction Water-works attended at the Richmond Petty Sessions to answer a summons for the non-payment of a poor-rate to the parish of Kew, for their pipes laid down in the river Thames, in that parish. On the part of the parish it was contended, that the company were liable to be rated for their pipes, although they were not inserted in the soil; and the decision of Judge Bayley, in the case of the King *v.* the Brighton Gas Company, (5 Bramwell and Bramwell, 470,) and that of Rex *v.* Bell (7th Term Reports, 598), were cited in support of that view. The solicitor for the company, on the contrary, argued that the occupancy by the pipes was a mere easement, and not rateable, as they were liable to removal, and could only be considered as a part of the stock-in-trade of the company. The bench decided that the company were liable, whether the pipes rested on or were imbedded in the soil, only that in the latter case the rate would be higher.

Measuring Tapes. — Sir: Very simple things are not to be always despised. The following improvement in measuring tapes seems both simple and obvious, yet I have never seen it adopted, except by myself. I claim no praise for the improvement, but I wish to make it public, if you think it worth making public, merely for the benefit of measurers and tape-makers. Instead, then, of having a round ring at the end of the tape, have a small brass D, the straight side being equal to the width of the tape. The consequence is, the tape will wear much longer, and it can be more accurately adjusted to the tape than a ring. The strain of the tape on a ring is at the two edges, causing the tape to wear, and in a very short time the ring to come off. In the D form the strain of the tape is equal throughout its breadth. I dedicate this improvement to Messrs. Chesterman and Bottow, for their excellent metallic tapes, if they choose to adopt it.—I am, Sir, &c., J. Blenkarn.

Ollerton, Notts.

* Longman and Co.

A Hydrostatic Turn-table has been patented by a Mr. Allan, of Crewe. The hydrostatic pressure is employed for the purpose of supporting the weight, not of turning it. The table or platform consists of a hollow water-tight box, made of wrought-iron plates, and supported in the turn-table pit, or reservoir, by water, or other fluid, while it revolves on a central fixed pillar. The pit is filled with water, or other fluid, just sufficient to sustain the maximum weight of the locomotive engine or carriage, the height of the surface of the water being adjusted proportionably with the maximum weight, and so maintained by a ball-cock, attached to a supply-pipe, from a cistern above. On the platform are three separate lines of rails abreast, crossed by three other sets of lines, so that one turn-table is sufficient to effect the transfer by a semi-revolution. The reservoir, or pit, is formed of masonry, or bricks, laid in cement, water-tight, with a firm basis on which the centre pillar can be properly supported.

Progress of New House of Commons.—In reply to questions asked on the 8th inst., by Lord Duncan, in the Commons, Lord Morpeth stated, that he had been informed by the architect, that he had no doubt the House would be ready for members within fifteen or eighteen months after the arrangements for ventilating, lighting, and warming the House had been settled! The Government, he might add, had thought fit to desire that Dr. Reid's projects might be carried into effect. Further progress had not been made with the official residences, the sums voted having been appropriated to the completion of the shell of the building in the first instance. The library, he believed, was in a state of considerable forwardness; and the architect had informed him that the residences of the Speaker and others would not be habitable until the exterior was more advanced towards completion.

Experiments on Cast-Iron.—Some experiments made at the Crane Foundry on the relative strength of cast-iron, *chilled* and *unchilled*, shewed that the process of chilling gave a superior strength of 17 per cent. The following experiment was tried on four bars, cast in the form of a double-faced railway rail, 1¼ in. deep, ½ in. wide at top and bottom, and ¼ in. in the centre—the length of each bar was 18 in., and 15 in. between the supports. No. 1 was cast in green sand; No. 2 in dry sand; No. 3 cast in a chill; and No. 4 in a chill, and afterwards annealed. No. 1 weighed 32·5 ozs., bore 1,232 lbs., and deflected ·130 in. No. 2 weighed 30·5 ozs., bore 1,008 lbs., and deflected ·114 in.; No. 3 weighed 34·75 ozs., bore 784 lbs., and deflected ·053 in.; and No. 4 weighed 34·5 ozs., bore 2,520 lbs., and deflected ·148 in. The advantages in favour of cast-iron, treated as No. 4, is evidently little less than 100 per cent. over No. 1, and 300 per cent. over No. 3.

Employment of the Irish Peasantry.—A greater extent of land must be brought into cultivation to enable a sufficiency of grain to be produced to feed the people. Happily this can be readily done, and the overplus labour fully employed, with great advantage to the country, by converting the bog or peat land, which spreads itself over three millions of acres, into *household fuel and charcoal;* for which unceasing demand will arise: and by cultivating the substrata of these bogs, which consist of a soil admirably fitted for agricultural purposes. It has been shown on the map published for "*the Irish Amelioration Society,*" set on foot for employing the overplus labour of Ireland, that the labour of one man will clear in 250 working days from an eighth to a sixth of an acre of peat bog averaged at eight feet deep; and that at 200 stations intended to be established, above 2,500 acres may be cleared annually. This would yield about 22,000 tons of potatoes, and every ten years of operations would add to the cultivable land of Ireland from twenty to thirty thousand acres of the most valuable soil, capable of producing at least 100,000 *quarters of wheat per annum.**

Steeple-climbing.—Wright, the steeple-climber, has been replacing the vane and pointing the steeple of St. John's Church, in Perth. The kite, by means of which he endeavoured to convey a rope over the vane, failed, and the means he used to accomplish the ascent were sufficiently daring to deserve notice. He obtained five rods, each about 15 feet long, so as on being joined together they would reach from the bartisan to the summit. They were no thicker than the butt end of a common fishing-rod. The first he placed against the steeple, and with no other than the precarious footing afforded by the lapping of the lead, and with the rod as his only hold by his hands, he climbed up so far as to be enabled to nail and lash the top of it to the steeple. Getting it steadied and secured thus, he pulled up a second rod by means of a cord, lashed it to the top of the first, mounted it also, fastened its top, pulled up a third, and so on until he reached the spire. He then pulled up and secured his tackle, and was soon safely again upon the bartisan. Men may be found to ascend to any altitude by means of scaffolding; but to climb up steeples nearly perpendicular, by means of nails, little bits of twine, and tender sticks, appears altogether incomprehensible.

* From "Employment of the Irish Peasantry," by Jasper W. Rogers, C.E.: Saunders, Charing-cross.

Progress in Carlisle.—The ancient city of Carlisle, after remaining for many years with little change in its condition, has recently begun to emerge from its state of inactivity, and to assume a more lively and bustling aspect. The *Manchester Guardian* says:—The number of new buildings of all classes bear manifest proofs of the increasing commercial prosperity of the town. The large amount of railway traffic on the Lancaster and Carlisle and Caledonian railways has been chiefly instrumental in bringing about this change, the necessity for which is most apparent. Unfortunately, the sanitary condition of Carlisle still stands very low, nor do its inhabitants seem at all alive to the vital importance of a thorough alteration in this respect. The drains, generally, are very inefficient; and in those parts of the town inhabited by the lower classes, the atmosphere is most offensive,—the refuse from the slaughter-houses, cesspools, &c., being allowed to accumulate to a most injurious extent. This, during the late summer and autumn, has been the cause of much fever and sickness. Active steps have been taken as to a regular supply of water and gas; and it is to be hoped that before long a proper supply of fresh air may be provided by a sounder system of drainage and ventilation. The water-works company are now constructing a large reservoir on Gallows Hill, under the direction of Mr. Simpson, civil engineer. The gas-company have lately built new gas-works, the old ones being purchased by the Lancaster and Carlisle Railway Company. The most important building erected in the town for many years is the new Citadel Station, which is now rapidly approaching towards completion.

Projected Works, &c.—Tenders have been called for by advertisement for erecting two wings to the Bedford Lunatic Asylum, and other works; for building a new church at Penrith, or for the mason's work separately and the other works collectively; for the erection of certain buildings at the Woburn Union Workhouse; for making alterations required in providing two additional wards at the Liverpool Workhouse, Brownlow-hill; also for manufacturing 5,000,000 of bricks for the new jail about to be erected at Walton (Liverpool), at per 1,000; and for erecting a new timber bridge over the Clyde at Dalmarnock (by Glasgow).

TO CORRESPONDENTS.

"*Inquiry.*"—Glass pipes have been made, and doubtless will be more extensively so.

"*W. W.*"—Go to a drawing-school for a time.

"*S.*"—If a reader of The Builder, would have seen that what the *Times* did once we have been doing constantly these two years.

"*Fact.*"—What asylum does he speak of?

"*Currency.*"—You would obtain what you wish at less cost from an individual. Ask some person to whom you are known.

"*A Londoner.*"—Next week.

"*Duomo of Florence.*"—Professor Donaldson's reply to "Inquirer" next week.

"*Institute of British Architects.*"—We are compelled to postpone our report of the last meeting. The paper read, "On the Construction of Sewers" is likely to excite controversy.

"*Pawnbrokers' Almshouses Competition.*"—We are led by representations to postpone giving particulars promised.

Received—"T. H." (Hackney), "Palladio," "C. L." (too late for present number.), "G. S." (Bermondsey), "W. D." "W. N." (shall be inquired into), "Veritas" (write to the managers), "A. B." (Dunmow), "E. N." "F. S." (not desirable), "J. A." "Quintin Matsys." "The Furnishing and Decorating Assistant," by H. Whitaker, No. 12; "Treasury of Designs," H. Whitaker, Part XIV. (Fisher and Co., St. Martin's-le-grand.)

"*Books, Prices, and Addresses.*"—We have not time to point out books or find addresses.

*** Correspondents are requested to address all Communications to the Editor, 2, York-street, Covent Garden.